Very Warm Welcome to the Seminar
Development of Decision Support Tools for Utilization and Conservation of Indigenous Farm Animal Resources and their Wild Relatives

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Country Report on State of Animal Genetic Resources of Pakistan

March, 2003

Prepared for Submission to FAO for First Report on the State of the World’s Animal Genetic Resources (SoWAnGR)
PAKISTAN

Rich genetic diversity in traditional subsistence farming

Priority Issues:
• Breed characterization and enumeration
• Genetic evaluation and improved utilization of buffaloes
• Establishment of recording and evaluation for indigenous dairy cattle breeds
• Capacity building for improved utilization and conservation of AnGR

Main priority actions
• Breed characterization and economic valuation, almost in all the species is needed
• Complete inventory of AnGR is needed to prioritize breeds for conservation
• Cost-effective performance recording schemes involving farmers are required to help improve utilization
• Capacity building is required to remodel the government livestock farms to include more breeds for conservation and development
• International support is needed for higher education in molecular genetics and computational breeding
• Poverty alleviation through livestock and poultry raising in rural areas needs attention in development programs
• Development of disease-free farms/zones will help improve sustainable utilization of indigenous AnGR for future

Current situation of AnGR
• AnGR inventory of Pakistan includes (millions) cattle (22), dairy buffaloes (24), sheep (24), goats (50), chicken (330), equines (4) and camels (1) apart from a small population of yaks
• Animals are generally raised in small-sized, mixed farming system for subsistence
• About 100 breeds of these AnGR have been identified along with wild relatives of sheep & goat
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6.2 Executive Summary

Pakistan is located in South Asia on both sides of the Indus river with Himachal in
State of the World’s Animal Genetic Resources

August 2002

Buffalo and Cattle Breeding Policy for Punjab

November 2003

Livestock Breeding Policy and Action Plan for Pakistan
LIVESTOCK ACTION PLAN: BREEDING POLICY FOR PAKISTAN

M. Sajjad Khan

November 2003
THE STATE OF THE WORLD'S ANIMAL GENETIC RESOURCES FOR FOOD AND AGRICULTURE
Food security through conservation and improved utilization of indigenous animal genetic resources

**NATIONAL PRIORITIES**

- Characterization & evaluation of indigenous AnGR & continuously monitoring trends & risks
- Capacity building of stakeholders in various aspects of AnGR conservation & sustainable use
- Development of major breeds through recording & genetic selection to meet food security goals
- Promotion of improved utilization of indigenous AnGR through public awareness & farmers participation at various levels
- *Ex situ* conservation program for threatened indigenous breeds

**CHARACTERIZATION, INVENTORY AND MONITORING OF TRENDS AND ASSOCIATED RISKS**

Breed level census are conducted every 10 year. The 2006 census contained 12 Cattle, 3 Buffalo, 17 Sheep and 12 Goat breeds. Population estimates for camels, donkeys, horses and mules were also presented. Yet, more than half of the known breeds, especially of small ruminants await population trends. Security concerns have complicated data collection and breed monitoring in some areas in the recent past.

**CONSERVATION**

Livestock breeding policy asks for conservation of local breeds and does not allow crossbreeding of indigenous breeds. The exotic semen especially of cattle is imported in the country and crossbreeding among indigenous and with exotics breeds pose threats to purebreds. Conservation of Sahiwal cattle is underway for the past few years and more such programs are anticipated for other breeds in future.

**SUSTAINABLE USE AND DEVELOPMENT**

Development and strengthening the sustainable use policies on AnGR is being accomplished through various projects such as progeny testing programs being executed for two buffalo (Nili-Ravi and Kundhi) and two cattle (Red Sindhi and Sahiwal) breeds. Sheep and goat breeding programs emphasize use of good rams/bucks. Development of indigenous chicken breeds is still at experimental levels.

**POLICIES, INSTITUTIONS AND CAPACITY BUILDING**

Institutional linkages for AnGR related activities are improving. Studies on characterization and improved utilization are underway. Training programs to improve capacity of stakeholders involved at different tiers are underway as well. New institutions such as Research Centre for Conservation of Sahiwal Cattle and Buffalo Research Institute should also help conserve and improve indigenous breeds.
Main Outcomes

Effective management of farm animal genetic resources (FAnGR) is essential to global food security, sustainable development and the livelihoods of hundreds of millions of people.

Livestock breeds have unique traits or combinations of traits that could contribute to meeting the challenges of

1. climate change impacts
2. emerging zoonotic and animal disease
3. global targets such as the MDG.
4. the rapidly rising demand for livestock products
Links to strategic priorities

**SP13** Establish or strengthen national educational and research facilities

**SP14** Strengthen national human capacity for characterization, inventory and monitoring of trends and associated risks, for sustainable use and development, and for conservation

**SP2** Develop international technical standard and protocols for characterization, inventory and monitoring and associated risks

**SP11** Develop approaches and technical standards for conservation

**SP19** Raise regional and international awareness of the roles and values of AnGR etc.
Development of Decision Support Tools for Utilization and Conservation of Indigenous Farm Animal Resources and their Wild Relatives

1. Bangladesh
2. Pakistan
3. Sri Lanka
4. Vietnam
PDF-B Studies

1. Status, Trends, Utilization and Performance of FAnGR and Their Wild Relatives in Pakistan
2. Current and Potential Market Supply and Demand, Market Opportunities and Consumer Preferences for Indigenous Breed Animals/Products
3. Characterization of Agro Ecological Context in which FAnGR are found
4. Policy and Legal framework Covering the Management of AnGR
5. Assessment of Capacity Building Needs at Local and National level
TECHNICAL REPORT ON THE STATUS, TRENDS, UTILIZATION AND PERFORMANCE OF FA nGR AND THEIR WILD RELATIVES IN PAKISTAN

M. S. Khan

June, 2004
**Project Title:** Development and application of decision-support tools to conserve and sustainably use genetic diversity in indigenous livestock and wild relatives

**Project Objective:** Develop and make available effective tools to support decision making for the conservation and sustainable use of indigenous animal genetic resources for food and agriculture (FAnGR) and their wild relatives in developing countries.

<table>
<thead>
<tr>
<th>Milestones</th>
<th>Dates</th>
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<tbody>
<tr>
<td>Work program</td>
<td>November 2007</td>
</tr>
<tr>
<td>Agency approval date</td>
<td>September 2008</td>
</tr>
<tr>
<td>Implementation start</td>
<td>October 2008</td>
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<tr>
<td>Mid-term evaluation (if planned)</td>
<td>October 2010</td>
</tr>
<tr>
<td>Project closing date</td>
<td>March 2014</td>
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**Outcome 1:** Enhanced conservation and management of FAnGR diversity using Decision Support Tools (DSTs)

Output 1.1. Appropriate breeding tools for low input productions systems including ONBS are developed and evaluated

Output 1.2. A tool for cost-benefit analysis of breeding programmes incorporating market and non-market values of FAnGR evaluated and made available

Output 1.3. Analytical frameworks for assessment of policy and marketing options (existing and alternatives) for FAnGR developed, evaluated and made available

Output 1.4. Tools for diversity assessment and for setting cost effective conservation priorities developed and made available
Outcome 2: Increased capacity and enhanced knowledge to use decision support tools for conservation of livestock diversity at national and global levels

Output 2.1. Capacity of stakeholders to apply the developed Decision Support Tools for conservation and sustainable management/ use of FAnGR and their wild relatives enhanced

Output 2.2. Knowledge and understanding of value of FAnGR and wild relative increased and replication strategies made available
Project Implementation Arrangement

Regional Project Steering Committee

Regional

Project Management Unit (PMU)

• Iain
• Okeyo
• Ibrahim

National Steering Committee (NSC)

National
National Steering Committee (NSC)

- FAO Pakistan
- IUCN Pakistan
- Secretary Min L&DD
- VC UAF
- Chairman PARC
- Add. Secretary Min. Env. (GEF focal person)
- L&DD Punjab
- Dean FAH, UAF
- National P D

Project Implementation Unit (PIU)

- (University of Agriculture Faisalabad)
- Hasilpur Coordinating committee
  - Farmers
  - Director DSR, DLO, NGO’s
- Site-II Coordinating committee
  - Farmers
  - DLO
  - NGO’s

Project Implementation Arrangement (conti...)
37. Application of these criteria resulted in agreement to work with three species (chickens, pigs and goats) and 9 sites. See Appendix G for a detailed description of the pilot sites, species and agro-ecosystem for each of the four project countries.

<table>
<thead>
<tr>
<th>Species</th>
<th>Sites</th>
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<tbody>
<tr>
<td>Bangladesh</td>
<td>Mymensingh District; and Sherpur district.</td>
</tr>
<tr>
<td>Goats</td>
<td></td>
</tr>
<tr>
<td>Pakistan</td>
<td>Bahawalpur District in Punjab province; Saeedabad in Mitari District in Sindh Province</td>
</tr>
<tr>
<td>Chickens</td>
<td></td>
</tr>
<tr>
<td>Goats</td>
<td></td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>Hambantota and Sooriyawewa in Hambantota District; Thirappane and Galenbindunuwewa in Anuradhapura District.</td>
</tr>
<tr>
<td>Chickens</td>
<td></td>
</tr>
<tr>
<td>Pigs</td>
<td></td>
</tr>
<tr>
<td>Vietnam</td>
<td>Northwest, Red River Delta Son la province; Bac ninh province</td>
</tr>
<tr>
<td>Chickens</td>
<td></td>
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</tbody>
</table>
University of Agriculture, Faisalabad

The University of Agriculture, Faisalabad has the best facilities for teaching and research on animal genetics and breeding in the country. This is the only university which has a well-established program of M.Sc. and Ph.D. in Animal Breeding and Genetics, and Agricultural Economics.

IUCN- Pakistan

IUCN is an international NGO, with government and NGO Membership that will play an advisory role in the project execution process. Extending

The role of the University will be two-fold. Firstly it will be an active partner in the execution of the project and provide technical backstopping during the course of the project period. Keeping that role in mind, membership in NSC has been proposed by the University. Secondly, through their thesis/dissertation research, graduate students will work in the project. The Departments of Animal Breeding & Genetics and Agricultural Economics will be particularly active in this role.
Outcome 1: Enhanced conservation and management of FAnGR diversity using Decision Support Tools (DSTs)

Output 1.1. Appropriate breeding tools for low input productions systems including ONBS are developed and evaluated
Output 1.2. A tool for cost-benefit analysis of breeding programmes incorporating market and non-market values of FAnGR evaluated and made available
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Output 1.4. Tools for diversity assessment and for setting cost effective conservation priorities developed and made available
Beetal
Beetal strains
Characterization of goat breeds for type traits
Ph.D study (2011)

Beetal (Red mottled) at UAF
Beetal (Black and white) at Bahadurnagar
Beetal (Black and white) at Kheriwala
Nachi at Kheriwala
Dera Din Panah at Kheriwala
Teddy I at Kheriwala
Teddy II at Chak Katora
Teddy III at Rakh Ghulaman
Development of a New Breed of Chicken

for Backyard Poultry Rearing – Phase I
2010-2012

M. Sajjad Khan

Department of Animal Breeding & Genetics
University of Agriculture Faisalabad

A research project sponsored by Higher Education Commission, Islamabad (Government of Pakistan)
Selected Aseel type
Development of Egg-type Naked-Neck Chicken Lines for Backyard Poultry

2011-2016

M. Sajjad Khan

Department of Animal Breeding & Genetics
University of Agriculture Faisalabad

A research project sponsored by Punjab Agriculture Research Board (Government of Punjab)
Project should be challenging yet enjoying.
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