

A Call to Action

WHAT YOU NEED TO KNOW





Contribution of domestic animals to food security



Present state of animal genetic resources



Domestic Animal Diversity Information System



What are animal genetic resources?



Contribution of indigenous animal breeds



How to become involved



What is domestic animals diversity



Action to conserve animal genetic resources



Questions and answers on animal genetic resources



What is the relationship between plant and animal diversity



The Global Strategy for the Management of AnGR



Frequently used terminology



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Contribution of domestic Animal to food Security



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DAD-IS



Contribution of domestic Animal to food Security

Of the world's 5.8 billion people about

1.96 billion

derive some livelihood from farm animals

12% of world's population depend almost entirely on livestock



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DAD-IS



Contribution of domestic Animal to food Security

**Domestic animals
meet more than
30%
of human needs
for food and agriculture**



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DAD-IS



Contribution of domestic Animal to food Security

Manure for fertilizer and fuel

Variety of nutritious foods

(calories, protein, essential amino acids, minerals)



Draught power

(cultivation, harvesting, irrigation, transport)



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DAD-IS



Contribution of domestic Animal to food Security

Hides and fibre for clothing



Medicinal products (insulin, wax and surgical supplies)



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- DAD-IS**
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Contribution of domestic Animal to food Security

**Cash reserves:
foreign exchange earnings
risk insurance for the small farmer**



Cultural and social contributions



Environmental protection



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what are **A**nimal **G**enetic **R**esources



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What are animal genetic resources?



Animal genetic resources include all species, breeds and strains that are of economic, scientific and cultural interest to food and agriculture now and in the future

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The major contribution to food and agriculture is made by 4500 to 5000 breeds comprising over 40 species of livestock

FOOD

AGRICULTURE

5000 BREEDS

40 SPECIES

What are animal genetic resources?



DAD-IS

HOME SECTION



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what is **D**omestic **A**nimals **D**iversity



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These breeds developed
over the past **12000** years in response
to human and natural selection



What is domestic animal diversity



DAD-IS

				
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Development of breeds over time has enabled humans to take advantage of the diverse production environments that exist in both developed and developing countries

What is domestic animal diversity



DAD-IS

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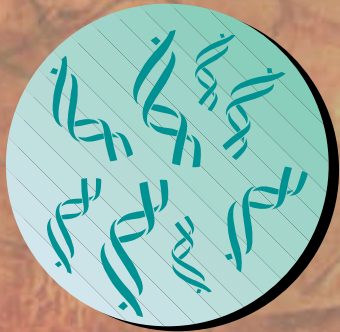


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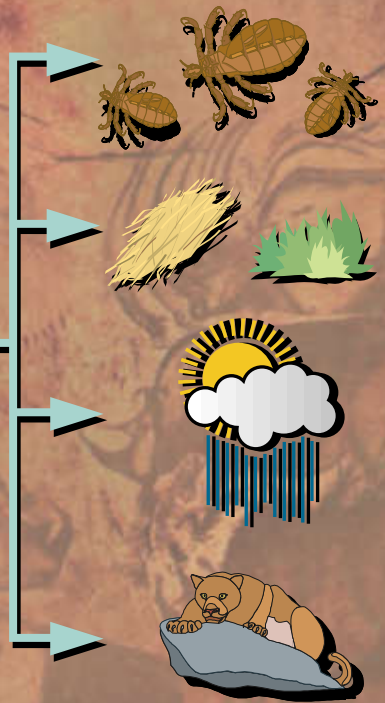


What is domestic animal diversity

Different combinations of genes within each species produce a range of adaptations to:



disease and parasites,
available feeds,
climate,
predators and many other
persistent variables imposed
by local conditions



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**About half of the total variation
in genetic makeup in each species
is at the breed level**



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DAD-IS



What is domestic animal diversity

The surviving breeds of livestock represent the pool of



Domestic



Animal



Diversity



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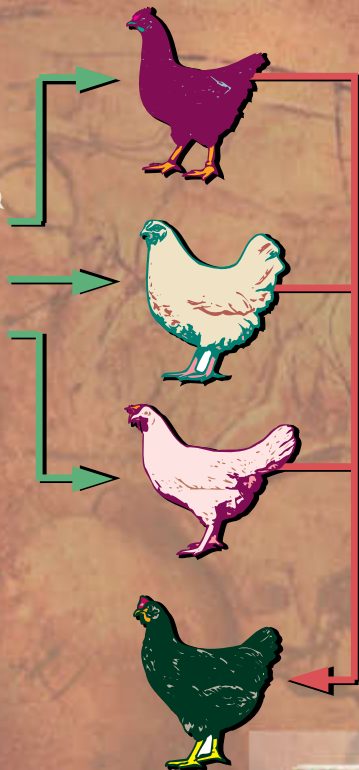
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The remaining reservoir of diversity allows farmers to select stocks or develop new breeds in response to changing conditions



DAD-IS

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what is the **R**elationship between **P**lant and **A**nimal **D**iversity





DAD-IS



What is the relationship between plant and animal diversity

**Most agro-ecosystems
involve the coexistence
and often
interdependence
of plants and animals**



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DAD-IS



What is the relationship between plant and animal diversity



Agro-biodiversity is being lost as a result of human population and development pressures and the rapid transformation of traditional agricultural systems



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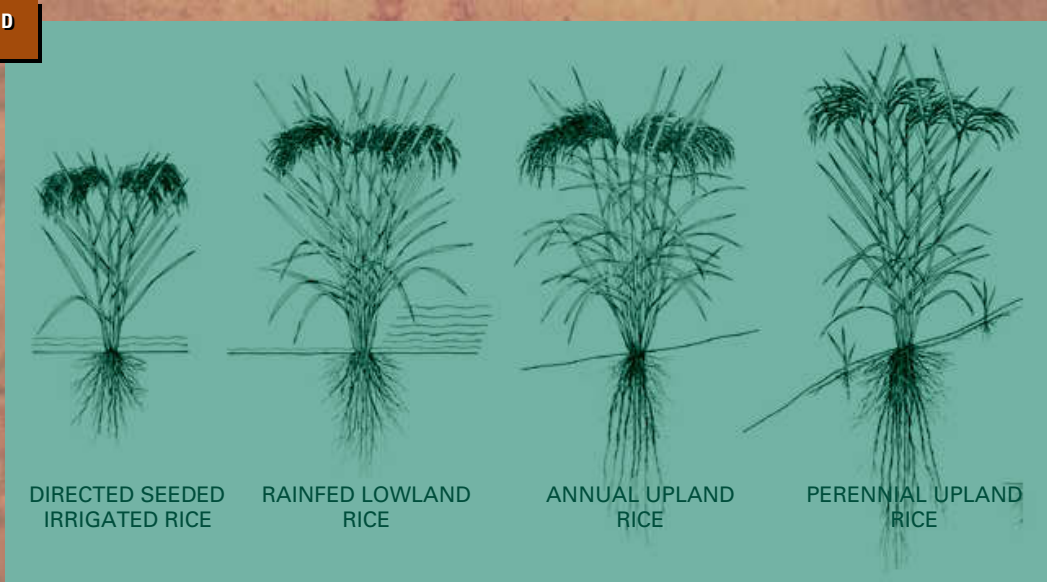
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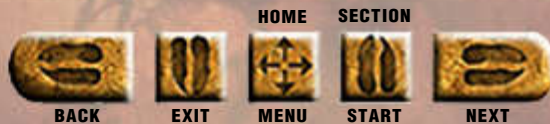
DAD-IS



What is the relationship between plant and animal diversity



Recent development of plant genetic resources has focused on careful matching of the genetics to the environment. As a result, a tremendous number of highly productive, adapted genetic lines have been developed





DAD-IS



What is the relationship between plants and animal diversity



In the case of domestic farm animals, attempts to increase productivity have focused on replacing a wide diversity of indigenous breeds by a small number of breeds developed for high input agriculture



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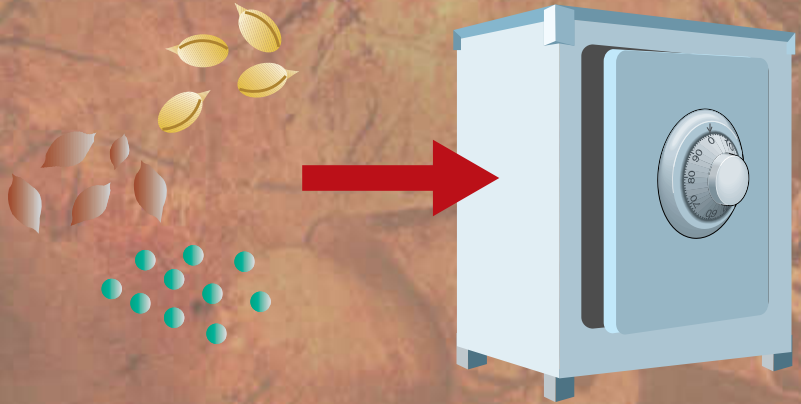


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**While traditional cultivated plant varieties
have been displaced by modern cultivars,
considerable progress has been made in efforts
to characterize and conserve plant genetic resources**



What is the relationship between plant and animal diversity

DAD-IS

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What is the relationship between plant and animal diversity



**Plant breeders
can also hope
to take advantage
of the
genetic resources
held in the
wild ancestors
of many
existing crops**



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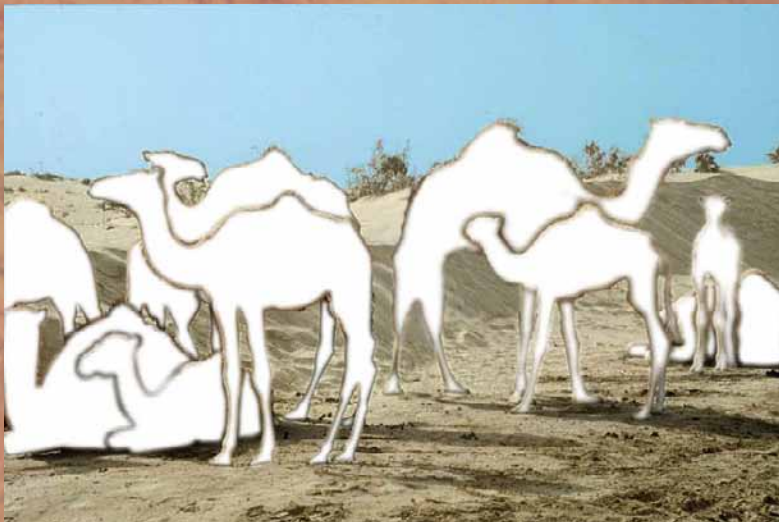


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What is the relationship between plant and animal diversity



**Unlike plant genetic resources,
few to no wild relatives
exist that might be drawn upon to replenish
the depleted domestic animal gene pool**



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What is the relationship between plant and animal diversity



The accelerating loss of indigenous breeds is reducing irreversibly the genetic base required for the range of production environments and the capacity to respond to change or the challenge, for example, of disease



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Present state of Animal Genetic Resources



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ONE

animal breed
is lost every

WEEK



Present state of animal genetic resources



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Present state of animal genetic resources

About **30%** of the remaining breeds are at risk of extinction



“At risk” means there remain less than 20 breeding males or 1000 breeding females 



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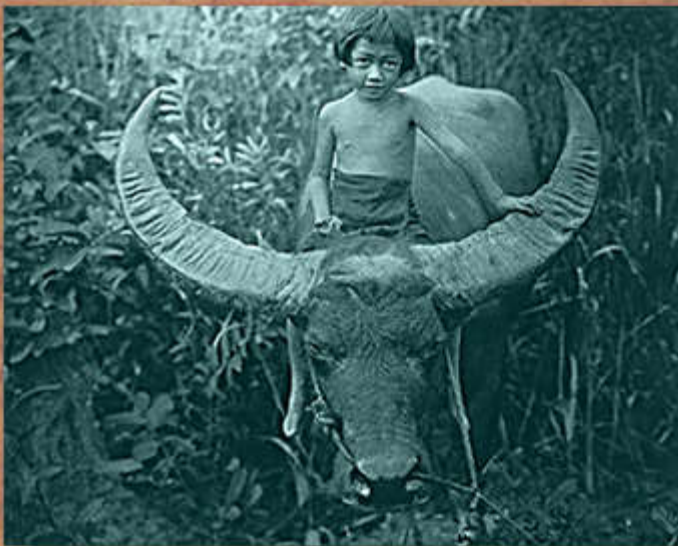
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Indigenous breeds are adapted to low-to-medium input production systems, which account for about three-quarters of production in the developing world



DAD-IS

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The exotic breeds that are replacing indigenous breeds are generally best suited to the high-input, benign production environments typical of developed country farming systems



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About **80%**
of the indigenous breeds at risk
occur only
in developing countries



Contributions of Indigenous Animal Breeds



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**Indigenous breeds contribute to local and national needs and demands, and are adapted to local conditions.
Their characteristics include:**

RESISTANCE
to disease
and parasites

**GREATER
LONGEVITY**
than exotic breeds

ADAPTATION
to harsh climates
and drought

ABILITY
to survive on poor
quality feed

INDIGENOUS BREEDS

indigenous breeds are
MORE PRODUCTIVE
in the environment
in which
they developed

RELIANCE
on traditional
knowledge rather than
imported technology



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In many production environments, especially those common in the developing world, exotic breeds fail to increase production or productivity over time



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Contribution of indigenous animal breeds

The best strategy for developing sustainable food and agriculture in low input systems is usually to improve or enhance locally adapted breeds



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Locally Adapted Breeds should be the Foundation for Sustainable Intensification of Production Environments

Contribution of indigenous animal breeds



DAD-IS



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Contribution of indigenous animal breeds




**Indigenous breeds
can help to maintain
traditional lifestyles
and cultures,
which may be
lost or eroded
with the adoption
of non-traditional
agricultural practices**



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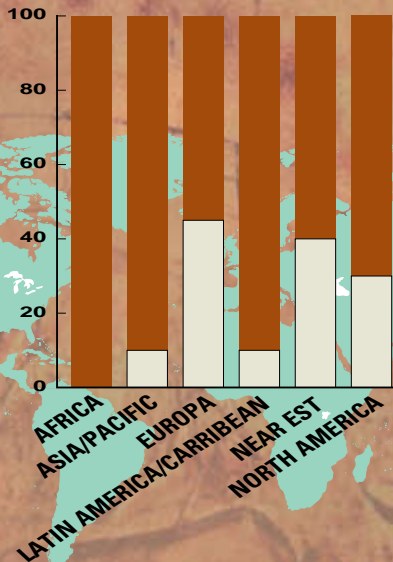
Action to **C**onserve animal genetic resources





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WHAT YOU NEED TO KNOW

Action to conserve animal genetic resources



 Animal genetic resources at risk **NOT** conserved (percent)
 Animal genetic resources at risk that are conserved (percent)

Few conservation plans exist or are being implemented for indigenous breeds at risk





Action to conserve animal genetic resources



The availability of animal genetic resources underpins both food security and sustainable agriculture and rural development



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Development must be based on breeds adapted to the particular agro-ecosystem



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Action to conserve animal genetic resources



**Biotechnology
holds some promise
but it relies on access
to genetic resources**



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Action to conserve animal genetic resources

Countries are interdependent on domestic animal diversity



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Sustainable use of animal genetic resources needs a country-based strategy in order to:

- overcome erosion of genetic resources
- maintain unique breeds
- develop indigenous breeds
- assess and characterize existing genetic resources
- enable access to data and resources
- help maintain culture and indigenous knowledge

The Global Strategy

for the management of
Farm Animal
Genetic Resources



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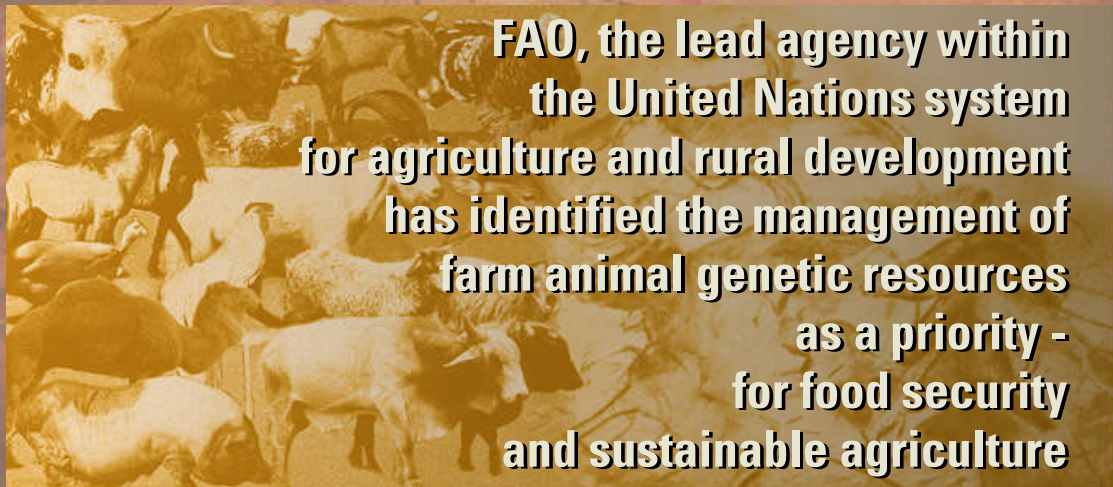
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FAO, the lead agency within the United Nations system for agriculture and rural development has identified the management of farm animal genetic resources as a priority - for food security and sustainable agriculture



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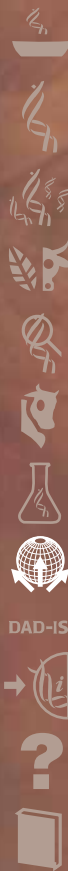
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The global strategy for the management of farm animal genetic resources



A Strategic Framework for
Animal Genetic Resources
Management is now
being developed



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The Global Strategy involves four key components:

- ▶ **The Commission on Genetic Resources for Food and Agriculture to enable direct involvement by governments**

The global strategy for the management of farm animal genetic resources



DAD-IS



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The Global Strategy involves four key components:

- ▶ **The Commission on Genetic Resources for Food and Agriculture**
- ▶ **A country-based global infra-structure to assist countries in developing, implementing and maintaining national strategies for the management of their farm animal genetic resources**

The global strategy for the management of farm animal genetic resources



DAD-IS



The Global Strategy involves four key components:

- **The Commission on Genetic Resources for Food and Agriculture**
- **A country-based global infra-structure**
- **A technical programme to improve understanding, increase managerial and policy capacity, provide training, facilitate communication, and assist the development and implementation of essential activities**

The global strategy for the management of farm animal genetic resources



DAD-IS



The Global Strategy involves four key components:

- **The Commission on Genetic Resources for Food and Agriculture**
- **A country-based global infra-structure**
- **A technical programme**
- **Cadres of experts to guide the strategy and ensure that it is technically sound and cost-effective**

The global strategy for the management of farm animal genetic resources



DAD-IS



The Global Strategy involves four key components:

- ▶ The Commission on Genetic Resources for Food and Agriculture
- ▶ A country-based global infra-structure
- ▶ A technical programme
- ▶ A reporting and evaluation system

The global strategy for the management of farm animal genetic resources



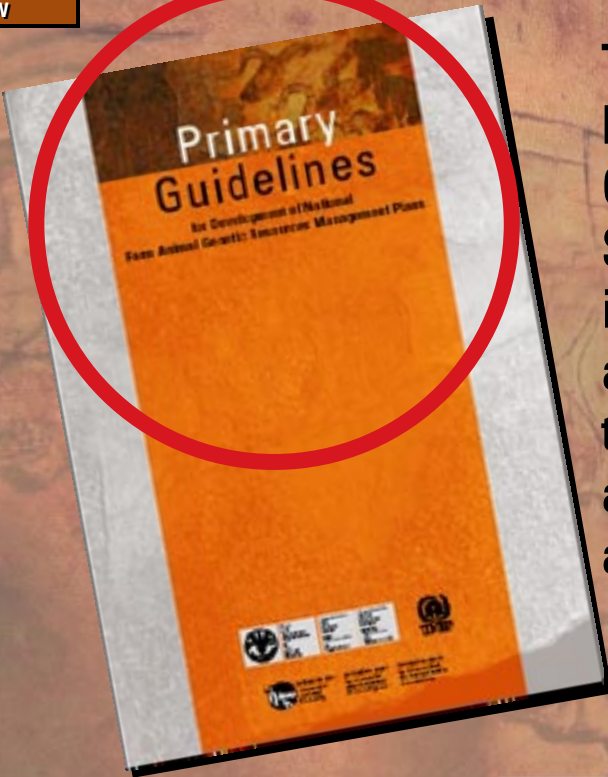
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DAD-IS



The
Farm Animal
Genetic Resources
Strategic Framework
is a focus for
assisting countries
to design
and implement
action strategies



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The global strategy for the management of farm animal genetic resources

The Global Strategy for the Management of Farm Animal Genetic Resources

Activities to Meet the Objectives

The Global Strategy for the management of farm animal genetic resources is a comprehensive framework for use in advancing the sustainable development, conservation, characterization and access to Farm Animal Genetic Resources. Its primary activity is being tailored by national and global entities and by neighboring countries working together.

At the global level the key activities, designed to meet the objectives are:

- Establish national focal points and a National Coordination to develop and assist national entities to design and implement effective management programmes for national genetic resources under such an international framework and common policy.
- Develop best practices, guidelines, manuals, and other educational materials on a global level to assist national entities to design and implement effective management programmes for national genetic resources under such an international framework and common policy.
- Establish regional focal points to work closely with national focal points and assist national entities to design and implement effective management programmes for national genetic resources under such an international framework and common policy.
- Conduct sub-regional seminars, workshops and other activities to build capacity and awareness.
- Conduct disease monitoring, surveillance and early notification of disease, and to disseminate the findings and experience and lessons learned.
- Develop a strategic plan for the management of farm animal genetic resources under such an international framework and common policy.
- Develop a strategic plan for the management of farm animal genetic resources under such an international framework and common policy.
- Develop a strategic plan for the management of farm animal genetic resources under such an international framework and common policy.



- Develop the Domestic Breeds Directory in Domestic Species (DBDS) to serve as a reference tool and encourage the use of national and local breeds.
- Encourage and facilitate characterization of national genetic resources through sampling and recording material, via the Global Database for Animal Genetic Resources, and develop the World Watch List for Domestic Breeds to be accessible via the Global Database for Animal Genetic Resources.
- Conduct a comprehensive review of national genetic resources through sampling and recording material, via the Global Database for Animal Genetic Resources, and develop the World Watch List for Domestic Breeds to be accessible via the Global Database for Animal Genetic Resources.
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Work in progress



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The animal genetic resources strategy developed by FAO meets the objectives of the Convention on Biological Diversity:



- conservation of biological diversity
- sustainable use
- sharing of benefits



DAD-IS

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Domestic Animal Diversity Information System





DAD-IS



The Domestic Animal Diversity Information System, **DAD-IS** , provides a modern country-focussed virtual structure for use in the Management of Farm Animal Genetic Resources



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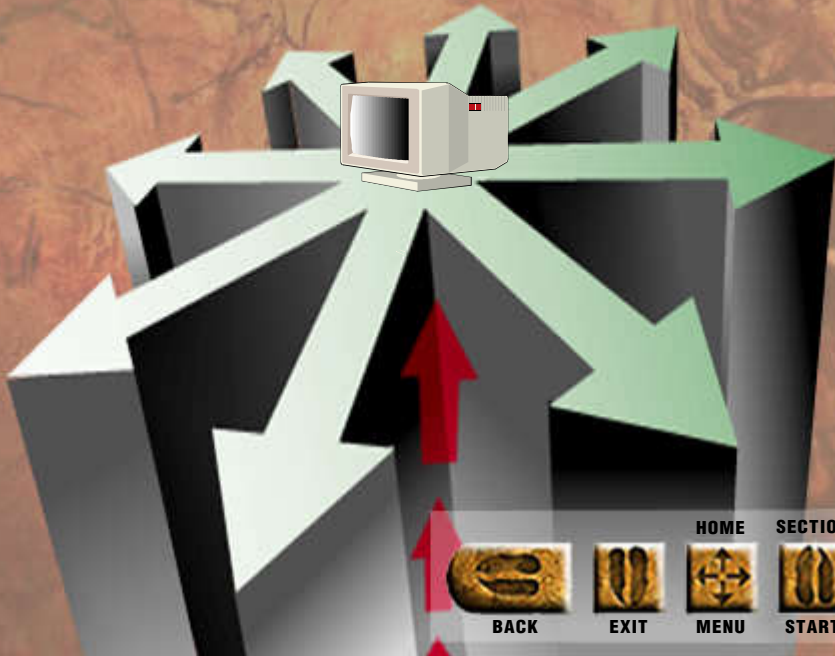


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DAD-IS is a Clearing-house for information and data



Domestic Animal Diversity Information System



DAD-IS

HOME SECTION



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DAD-IS is a Communication and Information Tool for use by countries



Domestic Animal Diversity Information System



DAD-IS

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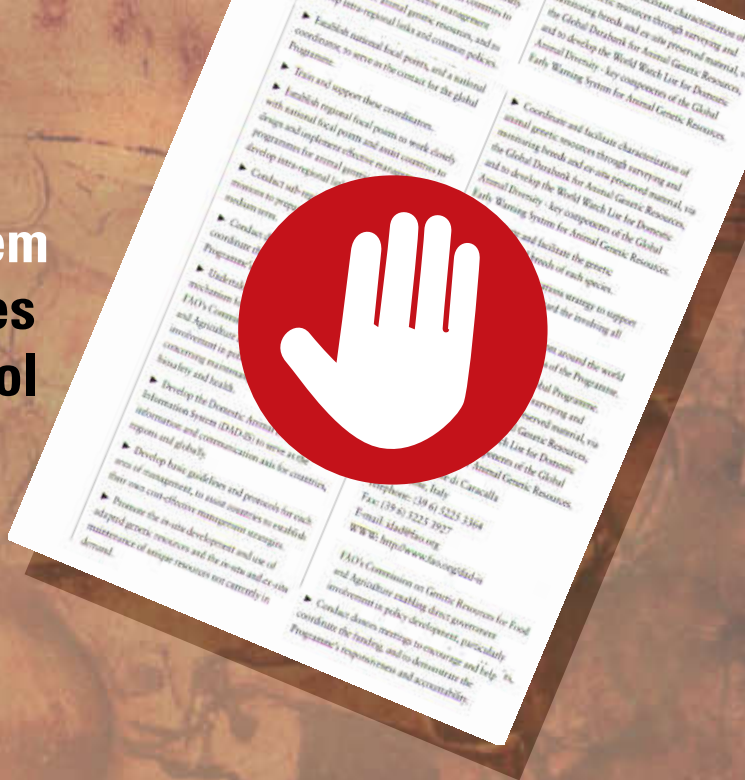


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DAD-IS is a Secure System giving countries absolute control over their data



DAD-IS



DAD-IS enables the objectives of the Convention on Biological Diversity to be realized



- conservation of biological diversity
- sustainable use
- sharing of benefits



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DAD-IS provides support to many different kinds of users



-  NFPs/Country Networks
-  International Collaborators
-  NGOs
-  Researchers
-  Trainers
-  Students



DAD-IS offers a broad range of functionality

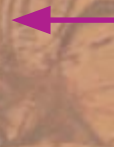
D A D - I S

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D A D - I S IS

- **A COMMUNICATION AND INFORMATION TOOL** FOR USE BY COUNTRIES
- **A CLEARING-HOUSE** FOR INFORMATION AND DATA
- **A SECURE SYSTEM** GIVING COUNTRIES CONTROL OVER COLLATING, RELEASING AND MAINTAINING THEIR DATA
- **AN ELEMENT OF THE STRATEGIC FRAMEWORK** FOR THE MANAGEMENT OF FARM ANIMAL GENETIC RESOURCES



**Click on these
main choices
to learn more
about them**

DAD-IS provides powerful project management software

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Summaries of Action Planner

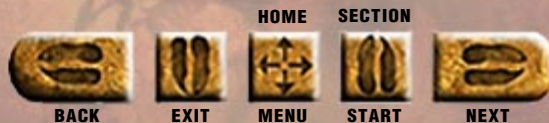
Summaries on the Action Planner with full field selection, grouping and restrictions. To see how the system works, select two data fields for output and then press the submit button. under construction

Criteria entered:

Data Fields:

Number of Projects	Country of APL	P.Id	Work Element	A.Id
132	Brazil	113	Communications	143
	Egypt	116	Training and Education	147
	Colombia	119	Action Planning	150
				151
				152
	Paraguay	120	Maintaining endangered resources	153
				154

Click here for example





DAD-IS



Domestic Animal Diversity Information System

DAD-IS facilitates low cost reporting and evaluation at all levels of Animal Genetic Resources Management



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How to Become Involved

in implementation
of the global strategy
for the management
of farm animal
genetic resources



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How to become involved in implementation of the global strategy

**As the lead agency for agriculture
in the United Nations system,
FAO is uniquely placed
to be a conduit
for global
co-ordination**



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How to become involved in implementation of the global strategy



DAD-IS

The Global Strategy for Farm Animal Genetic Resources aims to stir national and international consciousness of animal genetic resources and to increase substantially the cost-effectiveness management of these resources and the involvement of all stakeholders



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How to become involved in implementation of the global strategy

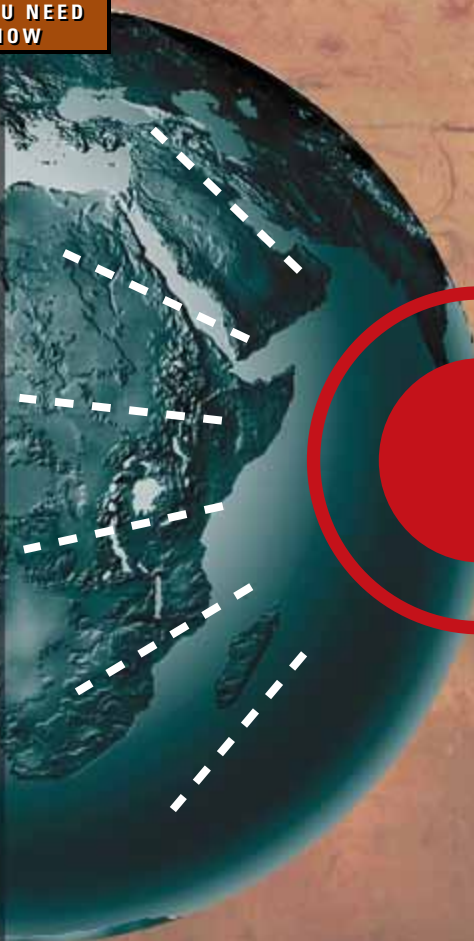


Diversity is ultimately lost or saved at the country-level therefore, this is where effective management action must be focused

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How to become involved in implementation of the global strategy



Government appointed **NATIONAL FOCAL POINTS**

coordinate the country network for
the management of farm animal
genetic resources and provide
the country link to the
Global Strategy.

DAD-IS



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Questions and Answers

on animal genetic resources



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What is a "breed"?

A cultural rather than a scientific term, to emphasize ownership. Countries identify their breed resources.

What is Management of Animal Genetic Resources?

The spectrum of activities required to survey and monitor, describe the nature and value of, sustainably use and develop, maintain, access and report on animal genetic resources. This calls for a new approach to education, training, research and field operations concerning these resources.

The place of biotechnology in the Animal Genetic Resources Management?

Reproductive and molecular biotechnologies will contribute but rely on access to animal genetic resources.



HOME SECTION

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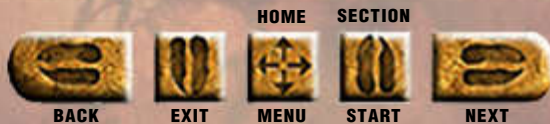
What does Food Security require?

Food Security requires the use of low-, medium- and high-input animal genetic resources. Intensification of most agroecosystems will be required but this must involve relevant technologies and genetic resources to suit the production environment.

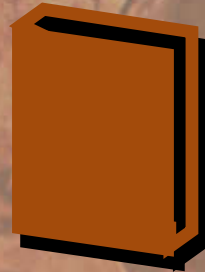
The majority of the world's agriculture will remain low to medium input, and comparatively high stress for the foreseeable future. Only genetic resources adapted to such environments will enable achievement of sustainable development.

Are Animal Genetic Resources replaceable?

Given the time horizons under which humankind is now operating and demand changing, and the costs involved, the unique combinations of genes which have developed over comparatively long periods in our remaining breeds of livestock must be considered irreplaceable.



Frequently Used Terminology



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Animal Genetic Resources (AnGR)

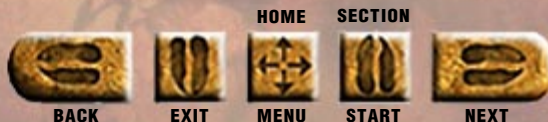
At the breed level, the genetically unique breed populations formed throughout all domestication processes within each animal species used for the production of food and agriculture, together with their immediate wild relatives.

Breed

"Breed" is accepted as a cultural rather than a technical term, i.e. to emphasise ownership, and also includes strains and research lines.

Conservation (of AnGR)

The range of operations involved in the maintenance of diversity, particularly concerning Animal Genetic Resources at risk. Both **in vivo** and **in vitro** conservation approaches are available. When deciding to use one or both approaches important issues are: their comparative cost and risk, and the ready availability of the resources once conserved.



Ex situ **Conservation**

In the context of conservation of domestic animal diversity, ***ex situ*** conservation means storage beyond the development environment. It involves the preservation as animals of a sample of a breed in a situation removed from its normal production environment or habitat, and/or the collection and cryopreservation of resources in the form of living semen, ova, embryos or tissues, which can be used to regenerate animals.

Food **Security**

Access by all people at all times to enough nutritionally adequate and safe food for an active and healthy life.



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DAD-IS

Global Early Warning System (GEWS)

Is comprised of the breeds and genome bank database built from country survey and description information on population size, trends and description on conservation programmes. The analysis of these databases provide for a system to identify breeds at risk of extinction. The results are released regularly by FAO as the World Watch List for Domestic Animal Diversity.

Global Focal Point (GFP)

Funded by FAO and located at FAO headquarters, co-ordinates, facilitates, involves all stakeholders and reports on the Global Programme. The GFP provides the Animal Genetic Resources secretariat support for the Commission on Genetic Resources for Food and Agriculture.

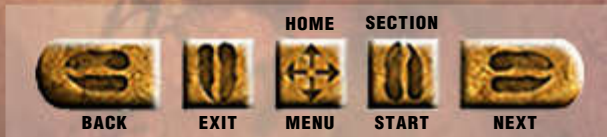


Global Strategy

The Global Strategy for the Management of Farm Animal Genetic Resources comprises : an intergovernmental mechanism for direct government involvement and continuity of policy advice; a country-based global infrastructure to help countries design, implement and maintain comprehensive national strategies for the management of animal genetic resources; a technical programme aimed at supporting effective management action at the country level; cadres of experts to guide the Global Programme and maximise its cost-effectiveness.



DAD-IS



***In situ* Conservation**

The breeding of animal populations at risk within their adaptive environments. Wise use is the best form of **in situ** Conservation.

Initiative for Domestic Animal Diversity (iDAD)

Is the sum total of all activities by all stakeholders in the characterization, development, use and maintenance of and access to animal genetic resources.



DAD-IS



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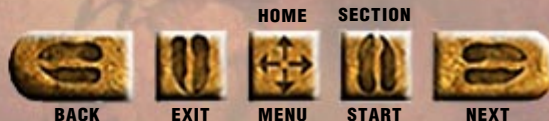
SECTION

National Focal Point (NFP)

Is the institution identified by a government to act as the point of contact for the Country's technical activity in the Management of Farm Animal Genetic Resources, and to establish the within country network of stakeholders to develop and implement an effective programme of management for animal genetic resources. A **National Co-ordinator** is identified at each NFP to operationalize and maintain the country network, link with government and all stakeholders, and provide the communications link to the Regional and Global Focal Points of the framework.

Regional Focal Point (RFP)

Located within each genetic storehouse region of the world, to act as the first point of contact for the region and to assist countries develop national action strategies for animal genetic resources, and identify projects to assist them implement these plans within the region. The RFP must be funded, and located within a suitable institution.



Sustainable Agriculture and Rural Development (SARD)

The management and conservation of the natural resource base, and the orientation of technological and institutional change, in such a manner as to ensure the attainment and continued satisfaction of human needs for present and future generations. Such development conserves land, water, plant and animal genetic resources, is environmentally non-degrading, technically appropriate, economically viable and socially acceptable.

Sustainable Intensification (of AnGR)

The active use and development of Animal Genetic Resources directed at realizing ongoing human food security, cost-effective maintenance of the production system and minimum impact on the surrounding environment. Quantity and quality of inputs and outputs will be of concern.



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Utilization (of AnGR)

The full range of uses of Animal Genetic Resources for food and agriculture purposes, including their sustainable intensification.

World Watch List for Domestic Animal Diversity (WWL-DAD)

This is the voice of the early warning system. It lists by region, country and species, breeds at risk of extinction.



DAD-IS



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Characterization - understanding animal genetic resources

Little information exists on performance, production and adaptive qualities of most animals of interest to food and agriculture. Even more critical, there is no complete, worldwide inventory of animal genetic resources, nor even a comprehensive system of monitoring by which farm animal breeds at risk of extinction may be identified.

For too many farm animal breeds it is already too late. In Europe alone, nearly half the breeds that existed at the beginning of this century are now extinct, and with them has gone genetic diversity of great potential value. Unless action is taken, the erosion of animal genetic resources worldwide seems destined to accelerate. It would be irresponsible not to safeguard those that remain since future food security may depend on their survival. FAO is the UN Agency with the mandate to help safeguard food security worldwide and FAO's Global Strategy for the Management of Farm Animal Genetic Resources has been established to assist nations in this vital sector of biodiversity conservation.

Characterization

In order to plan a conservation management strategy, it is necessary to define, record and assess the genetic resources at risk. Full description, or characterization, of animal genetic resources is essential. This is required at four levels;

- base-line survey - a national inventory of animal genetic resources is the essential starting point for any programme of management.

- monitoring - the population status of farm animal genetic resources needs to be monitored for effective and efficient conservation and management.

- comparative evaluation - increased genetic and economic knowledge of the unique qualities of breeds are required to develop strategies to make best use of these traits in the short and longer term.

- comparative molecular description - molecular markers can be used to establish which breeds harbour significant genetic diversity in order to better target conservation actions.

Monitoring animal genetic resources at risk

FAO's Global Databank for Animal Genetic Resources now includes information on over 3800 breeds representing 25 species. Population data is available for nearly 75% of these breeds. Further monitoring of population size

and status is required to target the type and timing of action needed for conservation. Surveying and monitoring must cover breeds maintained both as live animal populations and cryopreserved material.

- Population numbers of individual breeds in active use or being maintained as live animals can be monitored over time and population status determined.

- Germplasm stored as semen, embryos, oocytes, ova or other tissues provides a critical backup for populations



of small size. In some cases a genebank may be the only source of the material required to regenerate an already extinct breed.

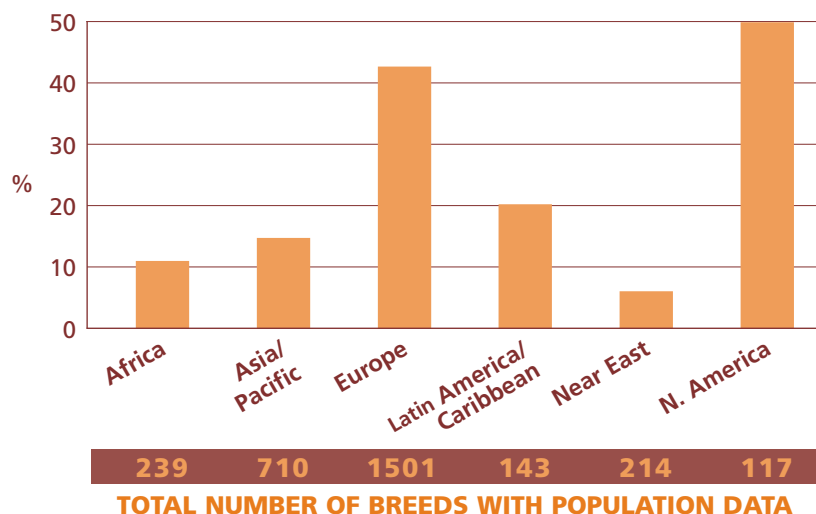
- Storage locations and access to genetic resources are of increasing interest globally.

This information provides the basis for FAO's Global Early Warning System for Farm Animal Genetic Resources. FAO analyses the survey and monitoring data and publishes a list of breeds which, based on population numbers, are identified as being at risk. Breeds for which there are less than 1 000 breeding females or less than 20 males are classified as "Endangered" and breeds having less than 100 breeding females and less than 5 breeding males are classified as "Critical".

A full thirty percent of those breeds with population data have reached the 'Endangered' or 'Critical' levels. This represents nearly 900 breeds which appear in the latest, 1995 edition, of the World Watch List for Domestic Animal Diversity. ➤

At least 30 percent of the Earth's genetic resources are currently at risk of loss. Because of their major contribution to food and agriculture of more than 30 percent and their essential role in sustainable production systems, a threat to domestic animal genetic resources is a threat to global food security.

Percentage of remaining animal genetic resources at risk of loss



Characterization - understanding animal genetic resources



Because of the radical change in the economic situation in Poland during the late '80s, the native Olkuska sheep were on the brink of extinction. A population survey carried out in the early '90s indicated less than 200 ewes remaining. This highly prolific breed may make important contributions in the future. Establishing the profile of animal genetic resources through survey, monitoring population status, and descriptive qualities are the essential first steps in better understanding, developing and using animal genetic resources.

Of this total, about one third are maintained in institutes, farm parks or are in some way managed in an attempt to conserve them. Lack of conservation management programmes for the remainder place them at a high level of risk of extinction. One out of every four breeds with population data, has reached this perilous state. Published by FAO with UNEP assistance, the World Watch List provides a focus of where conservation efforts are most urgent.

Characterization and indigenous knowledge

Over 180 countries are now participating in domestic farm animal diversity surveys, and the country-based national focal points being established will help to develop the monitoring aspect of the Global Strategy. One of the most challenging tasks has proved to be obtaining descriptive information about the production and adaptation characteristics of indigenous breeds, particularly those at risk, and details of the farming systems or agro-ecosystems in which they are found.

The indigenous knowledge that has helped to produce and maintain domestic animal diversity has largely been unexplored and yet this knowledge is essential in order to understand and continue developing these animal genetic resources.

Molecular biology

The magnitude of accelerating genetic loss is so great that it is unrealistic to consider devoting scarce international funds to a few breed rescue projects. FAO's Global Strategy for the Management of Farm Animal Genetic Resources aims to put in place a cost-effective strategy, accepting that human and financial resources which can be devoted in each country will continue to be at a premium. In order to better target scarce finances and resources the Strategy incorporates a global research project for the Measurement of Domestic Animal Diversity (MoDAD). MoDAD uses molecular techniques to establish the extent of diversity within a species by quantifying the genetic distance between breeds based on differences in their genetic make-up. MoDAD will help establish priorities for conser-



Native to the swampy Pantanal region of Brazil, close to the Bolivian border, the Pantaneiro horse shows remarkable resistance to equine infectious anaemia (EIA). Although horses may become infected they do not show symptoms of the disease. EIA is believed to be similar to the HIV causing AIDS in humans. It is hoped that research, using the Pantaneiro to understand how resistance is conferred, will lead to a better understanding of EIA and, possibly, HIV.



Scavenger chickens in the developing world may produce as few as 5 or more than 80 eggs per year. This sizable variation offers potential for rapid improvement. Because over 80 percent of the expected doubling of food demands in the next 20 years will arise in developing countries, and because much of the production must occur with few inputs, the answer to food security must include the adapted, but under-utilized, indigenous genetic resources.

vation. In addition, MoDAD will provide repositories of DNA and detailed genetic data important for future research and training.

Characterization is a fundamental element in the sound management of animal genetic resources. The Global Strategy will facilitate, coordinate and report on the collective efforts of all countries and international institutions participating in this work. The data and knowledge gained will build the foundation for the better use, development and maintenance of domestic animal diversity.



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Conservation of domestic animal diversity

Full advantage is being taken of relatively few domestic breeds of animals. As a result the agricultural community remains largely ignorant of the wealth of animal genetic resources which are potentially available to agriculture. Unless the genetic diversity represented by the range of locally adapted animals are conserved, we will never realize the potential of these resources to meet expanding human needs.

Conservation of agro-biodiversity is a low-cost way of guaranteeing future food security. This is particularly true in the developing world where diversity provides a greater assurance of food. It enables farmers to select and develop livestock breeds that are adapted to a range of environmental conditions. However, encouraged by promises of high production, farmers in recent years have come to rely on imported exotic breeds which are displacing the indigenous breeds. Too often, however, productivity and sustainability are reduced because these animals are not tolerant to the climatic, disease and nutrient constraints common in developing countries. With the loss of the indigenous breeds the capacity to achieve sustainable food security is threatened.

The Global Strategy for the Management of Farm Animal Genetic Resources is assisting participating countries to manage these irreplaceable resources and to conserve genetic diversity. The overall aim is to document, develop and make better use of the spectrum of unique genetic characteristics, prevent their further erosion and facilitate access to these resources.

A revolution going wrong

An estimated 1.96 billion people rely on livestock to supply at least part of their daily needs.

In developing countries, animals form an intricate part of agro-ecosystems, providing food, fibre, fertiliser and fuel. They provide 60 percent of draught power for the rural communities of the world and can provide a critical safety net for farmers and communities when crops fail. For many farmers and herders, livestock also represent an asset that provides security.

The threat to domestic animal resources is such that nearly one out of three breeds are at risk of loss. There are several reasons for this:



Taking action - The development of Jamunapari goats in India is an example of where local knowledge and participation in conservation is improving the quality of life for local people.

In recent years numbers of the breed declined because of replacement with exotic breeds. Action was required to prevent extinction of the Jamunapari - a large dairy breed with good meat carcass, able to survive under arid conditions.

A conservation programme was started involving scientists and farmers. Farmers are responsible for maintaining herds of these goats in exchange for veterinary assistance and advice.



- Over 60 percent of animal breeds are in developing countries that lack the finances to establish and maintain even the basic infrastructure for conserving domestic animal diversity.

- Conservation of breeds that are not presently of interest to farmers has received little attention.

- In general no systematic monitoring programmes are in place nor is there basic descriptive information for a high percentage of animal genetic resources.

- Indigenous breeds, few of which have been actively used and developed, are being replaced by imported breeds developed for high input-output production systems. This is the biggest factor undermining diversity.

Of this number of breeds at risk, two thirds lack any form of a conservation management programme. It is this group that are at high risk of extinction.

Future conservation must include a range of operations to manage and maintain genetic diversity:

- Identification, description and monitoring of existing breeds.

- Development and use of a wider spectrum of breeds - sustainable use is a most cost-effective method of ensuring survival of the gene pool.

- Storage of adequate samples of genetic material to ensure maintenance of and ready access to unique breeds at risk to permit future regeneration.

- Country and international level coordination and policy formulation to enable practical management strategies to be put in place.

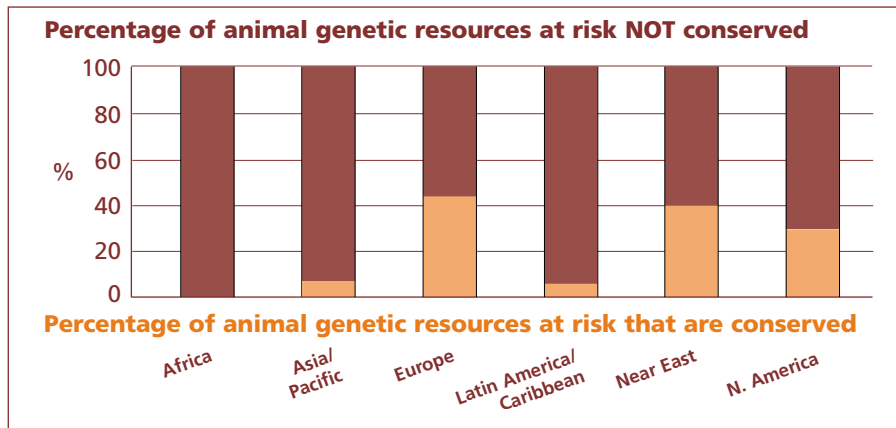
- Accelerated programmes of research and training in areas related to domestic animal resources.

Traditional knowledge that has helped to produce and conserve domestic animal diversity must not be over-looked if sustainable conservation programmes are to be a reality in the future.

Conservation in practice

Once a country's genetic resources are identified and characterized, they may be conserved *in situ* or *ex situ*. *In situ* methods maintain the animals in the habitat to which they are adapted, whereas ➤

Conservation of domestic animal diversity



Conservation programmes are lacking for over two thirds of breeds at risk of loss (less than 1 000 breeding females or less than 20 breeding males), without which small populations are destined to become extinct. Extinction results in permanent loss of unique combinations of genes and characteristics. For the vast majority of breeds for which population data is available, lack of sound, *in situ* conservation programmes means that these animal genetic resources remain largely underdeveloped and underutilized.

ex situ methods take animal genetic resources away from their traditional environment and conserve them in genomebanks such as cryoconservation facilities, farm parks and zoos.

In situ conservation enables animal populations to continue to evolve and be selected for use in the local production environment. In terms of climate, soil, altitude, feed supply, diseases and parasites, high stress environments persist throughout much of the developing world. Effective development of adapted breeds is essential if production, productivity, and sustainability are to be improved.

Once the characteristics desired in a particular breed have been defined, even if the breed has reached low numbers, it may still be possible to design and to introduce an improvement programme.

Although well established in developed countries, the necessary infrastructure for animal identification, performance recording, development and use of improved genetic resources is often lacking in the developing world.

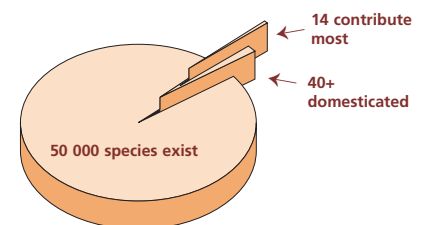
Eighty-five percent of the expected doubling of food and agriculture requirements in the next two decades will be in the developing world where production systems must remain at the low- to medium-input level in terms of feed and water supply, health care and other management interventions. To disregard the active use and development of local genetic resources to help meet this demand will reduce the prospects for food security with serious consequences for millions of people.

Ex situ conservation may also be required for those breed resources which are not of current interest to farmers, good samples of live animals cannot be retained. *Ex situ* conservation involves the collection and freezing of semen, ova or embryos. It also encompasses the captive breeding of domesticated animals in farm parks and zoos. The disadvantage of such genomebanks, whether maintaining live animals or cryoconserved material, is that the resources are removed from the natural conditions necessary for continued adaptation. Unless a conscious effort is made, knowledge about their use may disappear.

Other logistical concerns include the fact that cryoconservation technology is technically demanding and to date has been perfected for only a handful of animal species. Further, the regeneration of live animal populations of adequate size from frozen material can be a time consuming and costly process. This is especially true for species with long generation intervals.

Complementary approaches

Identifying and describing genetic resources are all-important first steps in conservation. There may be a variety of different activities and technologies required for cost-effective management of breed resources and maintenance of genetic diversity. Here *in situ* and *ex situ* conservation can complement each other and ensure against the shortcomings of any one method. For example, the use of artificial insemination (AI) in specialized breeding systems may enable efficient regeneration of a population. Alternatively, the use of AI from stores of semen enables the spread of useful genetic material in a way that is potentially more cost-effective than natural mating with adult males.



Little advantage is taken of most domestic animal diversity. Of 50 000 avian and mammalian species in the world, little more than 40 are used for agriculture and of these just 14 species contribute 90 percent of agriculture and food production under current systems of farming. Only 1-2 percent of all genetic resources of these 14 species are being developed using advanced breeding and recording techniques to improve their genetic potential for production and productivity.



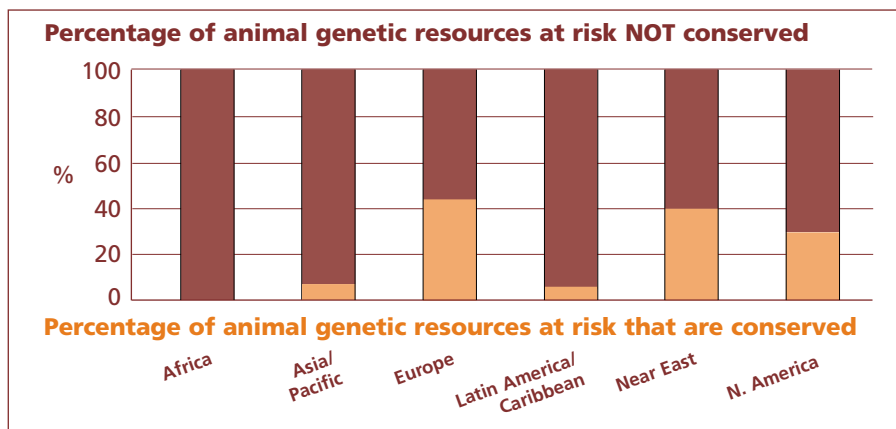
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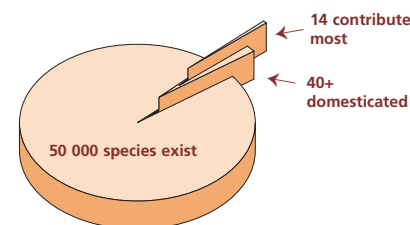
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Introducing the Global Strategy for the Management of Farm Animal Genetic Resources

Domestic animals meet at least 30 percent of human needs for food and agriculture in the form of meat, milk, milk products, eggs, fibre, fertilizer for crops and draught power. This major contribution is made by some 4 500 breeds drawn from 40 or more animal species. These breeds, developed over the past 12 000 years, represent the remaining pool of genetic diversity from which future demands must be met but, they are dying out at a rate of six breeds per month.

Recognizing the urgent need to assist countries take effective management action to develop, use and halt the erosion of their remaining animal genetic resources, FAO has established the Global Strategy for the Management of Farm Animal Genetic Resources, designed, implemented and led by the Initiative for Domestic Animal Diversity (iDAD). The Strategy's mission is to:

- document existing animal genetic resources,
- develop and improve their use in agriculture,
- maintain those not currently of interest,
- and facilitate access to those animal genetic resources important to food and agriculture.

Animal genetic resources include all species, breeds and strains that are of economic, scientific and cultural interest to agriculture, now and in the future.

Sustainable utilization based on adaptation

During the 20th century, much improvement has been accomplished in a few production traits and breeds mainly living in higher input and less stressful production environments.

However, genetic improvement in environments with more stress, mainly feed and climate, must be based on the utilization of locally adapted genetic resources.

The sinking ark

Indigenous breeds of domestic animals are being largely neglected. Latest information suggests that 30 percent of the world's breeds are at risk of loss. These vanishing breeds commonly possess valuable traits such as adaptation to harsh conditions, including parasitic and infectious diseases, drought and poor quality feed. They are being replaced in both developed and developing countries by a few high production breeds which, to be successful, require high inputs, skilled management and comparatively benign environments.

There is already less genetic variation

in farm animals than in crop plant species. Yet farmers depend upon this diversity to raise animals able to respond to unpredictable changes in the environment, threats of disease, or changing market conditions. Further erosion of animal diversity invites disaster as options for long-term productivity and sustainability are lost.



Domestic animal genetic resources represent a wide range of adaptations which enable productivity and the assurance of food under harsh environments. Fat tailed sheep - a group of several sheep breeds - are able to produce under very dry, arid conditions. Privation is avoided by calling on this fat reserve.



Given the expected doubling of food needs in the next three decades, farm animal diversity is essential to food security - a consensus of member countries of FAO who have expressed firm support for the development and implementation of the Strategy.

Global Strategy and role of FAO

Most countries have their own unique livestock breeds and, under the Convention of Biological Diversity, have sovereignty over these resources. With this right comes accountability for their development and use and the responsibility to conserve those which are not presently of interest to farmers. But the Convention recognizes the financial and technical constraints of developing countries and the need for international support. Furthermore countries, both developed and developing are becoming increasingly inter-dependent as they seek access to unique animal genetics from elsewhere.

FAO's Global Strategy addresses these issues. It consists of:

- **An inter-governmental mechanism** for direct government involvement and continuity of policy advice and support, through FAO's Commission on Genetic Resources for Food and Agriculture. This is especially important when policy regarding sustainable use, conservation, the sharing of benefits, bio-safety and legal issues are involved.

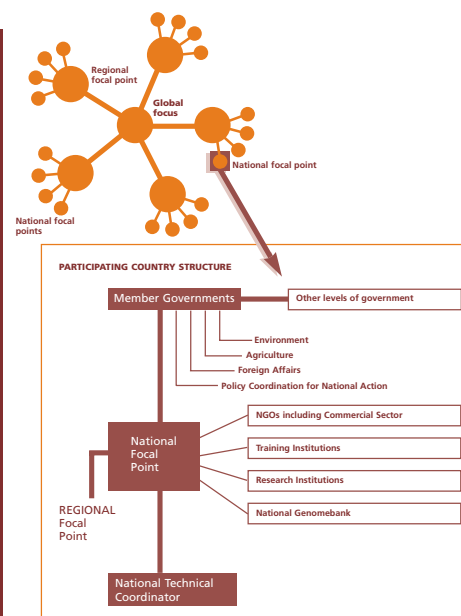
- **A technical programme** of activity aimed at supporting effective management action at the country level. The technical programme has been designed to promote a better understanding of animal genetic resources, improve the development and use of these resources, increase the capacity and training within countries in these areas, and encourage effective communication of the issues related to animal genetic resources. Cadres of experts to guide the Strategy's development and maximize its cost effectiveness.

- **A country-based global infrastructure** to assist countries design, implement and maintain comprehensive national >

The Global Strategy for the Management of Farm Animal Genetic Resources

STRATEGY'S OBJECTIVES

- To develop and support a country-based global infrastructure for the management of animal genetic resources.
- To promote better understanding and increased awareness of the importance of animal genetic resources.
- To stimulate the involvement of all stakeholders.
- To ensure harmony of the global strategy with the Convention on Biological Diversity.
- To enable inter-governmental discussion and policy development.
- To help countries design and implement management strategies for animal genetic resources.
- To facilitate the development and use of locally adapted animal genetic resources.
- To assist the conservation in national and global genomebanks of animal genetic resources to ensure preservation of important genetic resources.
- To promote the development of essential technologies needed to improve the cost-effectiveness of strategies.
- To upgrade training and facilitate capacity building.
- To monitor and report on the status of domestic animal diversity globally.



Based in FAO headquarters in Rome, iDAD has been established to develop and deliver the Global Strategy. The Strategy will assist countries develop, implement and maintain sound management strategies for their animal genetic resources.

Regional focal points are being developed in Africa, the Americas, the Asia-Pacific region, Europe, and the Near East and Mediterranean.

The dispersed infrastructure emphasizes sovereignty of countries over animal genetic resources and enables effective communication at all levels including governmental and non governmental parties and research and training institutions.

global information network, the Domestic Animal Diversity Information System (DAD-IS).

Initially the Programme will focus on the 14 most important domestic species. Together they account for over 90 percent of the total contribution made by domestic animals to agriculture. The Programme will be expanded later to cover the important animal genetic resources of interest to food and agriculture comprising the remaining 25 or so farm animal species and their wild relatives. Wild relatives may be domesticated in their own right or contribute useful genes to domestic animals.

FAO is providing the core funds to maintain the global focus for the Strategy but financial support will be required for country, regional and global operations. Because of the current, and growing dependence on domestic farm animals, a sound global management programme will benefit all nations both now and in the future.

strategies for the management of their resources.

- **Reporting and evaluation** to guide the Strategy's implementation, facilitate collaboration, coordination and policy development and maximize cost-effectiveness.

To take full advantage of FAO's Global Strategy, countries must appoint an institution as a NATIONAL FOCAL POINT and identify a technical coordinator. The coordinator will be the point of contact for the country's involvement in the Global Strategy and will assist in organizing the essential in-country network.

The Initiative for Domestic Animal Diversity involves stakeholders, providing support to the national coordinators through a REGIONAL FOCAL POINT responsible for managing iDAD operations in each major region of the world. The Regional Focal Points provide critical support for country action planning, development of effective national coordinators, and establishing strong networks within the region.

The global focus for iDAD, located in Rome, is responsible for designing, implementing and leading the Programme, developing the necessary guidelines and procedures, and putting in place the global information system. The Initiative, which has expertise in animal reproduction, genetics, management information systems and development, also supports the Secretariat for the inter-governmental mechanism.



Resources for the unpredictable future - During the '70s, driven by economic pressures of high costs of housing sows in intensive units and the concerns expressed by animal welfare groups, the British pig breeding industry was looking for genetic resources which would enable cost-effective management of sows outdoors. This need - not foreseen a decade earlier - was partly met by the unique genetic qualities of the saddleback breed. The saddleback offered good grazing, mothering and fat qualities which combined with the very lean modern pig breeds enables highly productive outdoor housing systems.

The decentralized nature of the strategic framework enables it to be responsive to the needs of countries and provide the maximum assistance. It is supported by a



Further information on the Strategy is available from:



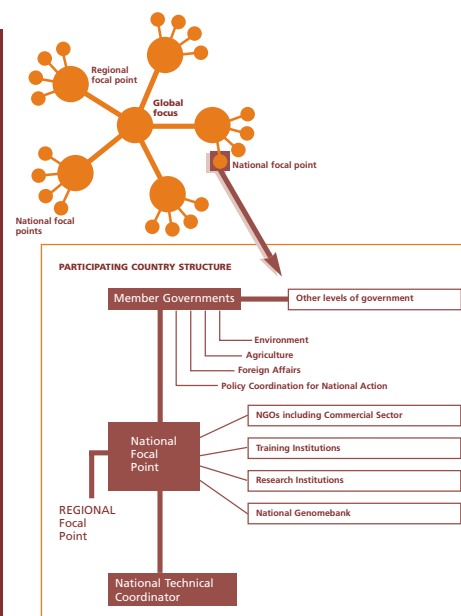
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The Global Strategy for the Management of Farm Animal Genetic Resources

STRATEGY'S OBJECTIVES

- To develop and support a country-based global infrastructure for the management of animal genetic resources.
- To promote better understanding and increased awareness of the importance of animal genetic resources.
- To stimulate the involvement of all stakeholders.
- To ensure harmony of the global strategy with the Convention on Biological Diversity.
- To enable inter-governmental discussion and policy development.
- To help countries design and implement management strategies for animal genetic resources.
- To facilitate the development and use of locally adapted animal genetic resources.
- To assist the conservation in national and global genomebanks of animal genetic resources to ensure preservation of important genetic resources.
- To promote the development of essential technologies needed to improve the cost-effectiveness of strategies.
- To upgrade training and facilitate capacity building.
- To monitor and report on the status of domestic animal diversity globally.



Based in FAO headquarters in Rome, iDAD has been established to develop and deliver the Global Strategy. The Strategy will assist countries develop, implement and maintain sound management strategies for their animal genetic resources.

Regional focal points are being developed in Africa, the Americas, the Asia-Pacific region, Europe, and the Near East and Mediterranean.

The dispersed infrastructure emphasizes sovereignty of countries over animal genetic resources and enables effective communication at all levels including governmental and non governmental parties and research and training institutions.

global information network, the Domestic Animal Diversity Information System (DAD-IS).

Initially the Programme will focus on the 14 most important domestic species. Together they account for over 90 percent of the total contribution made by domestic animals to agriculture. The Programme will be expanded later to cover the important animal genetic resources of interest to food and agriculture comprising the remaining 25 or so farm animal species and their wild relatives. Wild relatives may be domesticated in their own right or contribute useful genes to domestic animals.

FAO is providing the core funds to maintain the global focus for the Strategy but financial support will be required for country, regional and global operations. Because of the current, and growing dependence on domestic farm animals, a sound global management programme will benefit all nations both now and in the future.

strategies for the management of their resources.

- **Reporting and evaluation** to guide the Strategy's implementation, facilitate collaboration, coordination and policy development and maximize cost-effectiveness.

To take full advantage of FAO's Global Strategy, countries must appoint an institution as a NATIONAL FOCAL POINT and identify a technical coordinator. The coordinator will be the point of contact for the country's involvement in the Global Strategy and will assist in organizing the essential in-country network.

The Initiative for Domestic Animal Diversity involves stakeholders, providing support to the national coordinators through a REGIONAL FOCAL POINT responsible for managing iDAD operations in each major region of the world. The Regional Focal Points provide critical support for country action planning, development of effective national coordinators, and establishing strong networks within the region.

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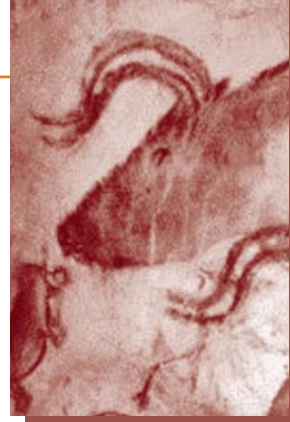
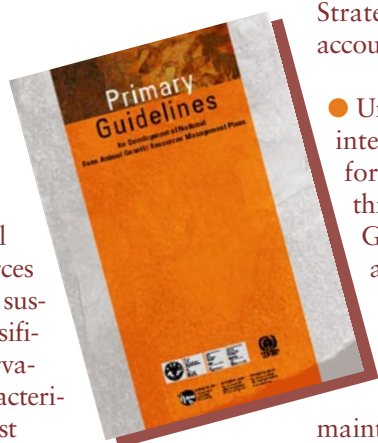
The Global Strategy for the Management of Farm Animal Genetic Resources

Activities to Meet the Objectives

The Global Strategy offers countries a comprehensive framework for use in advancing the sustainable development, conservation, characterization and access to Farm Animal Genetic Resources. In-country activity is being assisted by regional and global action and by neighboring countries working together.

At the global level the key activities underway to meet the objectives are:

- Establish national focal points, and a National Coordinator, to develop and assist an active country network.
- Train and support these coordinators.
- Establish regional focal points to work closely with national focal points and assist countries to design and implement effective management programmes for animal genetic resources, and to develop intra-regional links and common policies.
- Develop basic guidelines, protocols and tool kits for each area of animal genetic resources management, sustainable intensification, conservation and characterization, to assist countries to establish their own cost-effective management strategies.
- Conduct sub-regional missions to identify and formulate activities for collaborative action.
- Conduct donors meetings to encourage and help coordinate the funding, and to demonstrate the Strategy's responsiveness and accountability.
- Undertake preparation for the intergovernmental mechanism for animal genetic resources through FAO's Commission on Genetic Resources for Food and Agriculture enabling direct government involvement in policy development, particularly to realize food security imperatives, and maintenance, access, sharing of benefits, biosafety and health.



- Develop the Domestic Animal Diversity Information System (DAD-IS) to serve as the information and communication axis for countries, regions and globally.
- Promote the *in-situ* development and use of adapted genetic resources and the *in-situ* and *ex-situ* conservation of unique resources not currently in demand.
- Coordinate and facilitate characterization of animal genetic resources through surveying and monitoring breeds and *ex-situ* preserved material, via the Global Databank for Animal Genetic Resources, and develop the World Watch List for Domestic Animal Diversity - key components of the Global Early Warning System for Animal Genetic Resources.
- Coordinate and facilitate the genetic characterization of breeds of each species, to provide the critical information required to develop cost-effective, sustainable intensification and conservation activity.
- Develop a communications thrust to support the Strategy, geared toward assisting countries and involving all stakeholders.
- Utilize technical expertise from around the world to maximize the cost-effectiveness of the Strategy.
- Report on progress with implementation of the Global Strategy.
- Assist with development of policies for wise use, conservation, access and benefit sharing.



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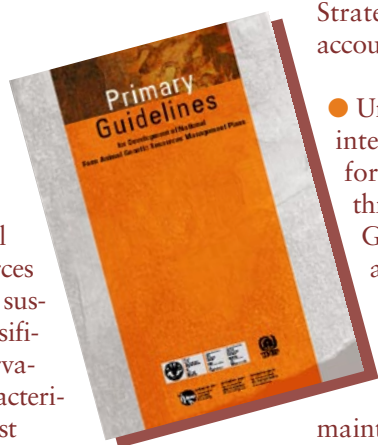
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Domestic animal diversity information system

The importance of domestic animal diversity worldwide, and the quantity of data and other information needs involved, calls for a wide-ranging but flexible information and communication system. Timely information is essential to the conservation of diversity and if sound strategies for the development and better use of animal genetic resources are to be devised, that information must be easy to access. The Domestic Animal Diversity Information System (DAD-IS) is designed to link all parties to the Global Strategy for the Management of Farm Animal Genetic Resources.



Available to computer users whether experienced or inexperienced, DAD-IS is being developed to provide state-of-the-art support in teaching, research and management geared to survey, monitor, better develop and use domestic animal diversity. DAD-IS will be of interest and benefit to all stakeholders - from farmers to government policy makers.

DAD-IS

DAD-IS is a multi-language, multi-faceted, computerized information and communication system. It provides state-of-the-art support for teaching, research, formulating policies, early warning and conservation of domestic animal diversity. DAD-IS is accessible by anyone who has a computer and Internet access for WWW, E-mail or a CD-ROM. It will provide information services to users who may be from government or non-government organizations, development agencies, or to individuals such as scientists, students, farmers, conservationists, journalists and others regardless of their level of computer experience. Those without computer access can also utilize DAD-IS by requesting information from iDAD at FAO in Rome (see address, phone and fax, reverse of sheet).

DAD-IS is designed to be used to:

- improve understanding of farm domestic animals;
- encourage greater development and proper utilization of this genetic diversity;
- monitor breeds, their population size and status;
- support the collection of descriptive information such as performance and production attributes of breeds, and describe the production environment to which they are indigenous.
- catalogue those breeds not currently in demand but which are preserved in genomebanks, farm parks or zoos;
- support the global early warning system for animal genetic resources;
- provide a means by which the issues surrounding animal genetic resources may be communicated and debated;
- facilitate training of people involved in animal genetic resource management;
- enable more cost-effective design and analysis of research;
- simplify the logistics of the pro-

gramme of management at country, regional and global levels;

- facilitate reporting and evaluation on implementation of the Global Strategy;
- encourage involvement in DAD-IS so as to ensure its continued development as a dynamic system.

Collecting and managing data

DAD-IS has been created as an interactive system to particularly assist countries, by enabling low cost collection and distribution of a range of information, for aiding training and research and to promote in and across-country communication. Some modules involve databases enabling countries to develop at low cost their surveying, monitoring, description and reporting needs for improved management of their breed resources.

The DAD-IS databases incorporate cross-links to provide for combinations of data. For example, the Global Databank for Animal Genetic Resources combines breed and production system information with that on cryopreserved and live animal stores and on key contact people, from the Breeds, Genomebank and Contacts databases.

Promoting conservation and management action

DAD-IS will assist countries to design, implement and maintain cost-effective management action plans for animal genetic resources of all domestic species. ➤

INFORMATION AT A CLICK

Place the cursor on the type of information required and click the mouse - in just seconds DAD-IS does the rest:

Two examples illustrate how DAD-IS pools available knowledge and offers immediate options to some of the problems relating to the use of animal genetic resources:

- *Despite wide-spread grasslands, Zone A in country B has no animal production. Conditions seem suitable for raising sheep but experience has shown that local breeds suffer from footrot and internal parasites due to wet conditions and these lead to high mortality and loss of production. DAD-IS identifies those sheep breeds from similar environments elsewhere which are indigenous to wetland areas, their current uses and other characteristics.*
- *Breed X in country Y is declining rapidly due to displacement by the imported exotic breed Z. But breed Z suffers periodic high mortality and low productivity due to stress and disease. DAD-IS can give all the information needed to determine whether to pour more investment into taking steps to halt the decline of breed X, improve the resistance of breed Z, or embark on another alternative.*



Domestic animal diversity information system



PAK KARAKUL GENERAL INFORMATION

Country:	Pakistan
Species:	Sheep
Breed name:	Pak karakul
Local names:	Pak karakul

POPULATION DATA

Year of collection:	1992
Total population size:	853
Total number of females being bred:	346
% of females being bred pure (mated to males of own breed):	100
Total number of males used for breeding:	21
The number of females is:	stable

PERFORMANCE

Milk yield per lactation (kg):	31
Lactation length (days):	115
Milk fat (%):	6.7
Litter size:	1
Birth weight male (kg):	4.5
Birth weight female (kg):	3.5
Fleece weight female (kg):	2.4
Adult wither height males (cm):	75
Adult wither height females (cm):	66
Adult live weight males (kg):	55
Adult live weight females (kg):	31

Management conditions under which performance was measured:	Stationary, Grazing
---	------------------------

DAD-IS is the global information source for information on nearly 4,000 breeds representing 28 species of domestic animals. This interactive system supports the harvest of data on breed population data and status. Where available, it maintains descriptive information on performance and production attributes. DAD-IS also supports the analysis of this database information to enhance decision making crucial for effective management of animal genetic resources.

Communication

A further extension of the information technology provided through DAD-IS will enable 'meeting' through computer links and publication of conference proceedings in electronic form. A 'What's New?' facility on DAD-IS will provide up-to-date information on the very latest issues relevant to domestic animal diversity. For those connected to the Internet, an email system enables 'dialogue' with users worldwide. The conferencing capability will also dramatically reduce the cost of otherwise expensive working group sessions and enable a larger group of expertise to be tapped.

DAD-IS is effectively the gateway for up-to-date information. It will facilitate the capability of countries to take up the management challenge for the better development and use of their animal genetic resources and conservation of domestic animal diversity.

DAD-IS provides an 'operations' management facility for strategies for domestic animal diversity conservation.

DAD-IS users can access breed information on population size, location, production and performance characteristics. The system aims also to provide details on adaptive qualities and a description of the production environment. A Genomebank database will provide information on cryopreserved germplasm and breed populations conserved in institutes, farm parks or zoos.

A 'Who's who?' listing of institutions and individuals will provide easy access to contacts for information, and assistance for animal genetic resources management.

DAD-IS will provide the guidelines for designing and implementing each element of national management action plans, and for appropriately linking these with the nation's total biological diversity action plan. DAD-IS will help prevent duplication of effort and help countries to meet

their responsibilities under the Convention on Biological Diversity.

Closing the knowledge gap and creating new knowledge

DAD-IS seeks to lower the cost and greatly increase the amount and effectiveness of training and education in animal conservation genetics and procedures. This is achieved through a system of shared expertise, information and computer-assisted learning packages.

Many domestic animal breeds have been lost because they have been undervalued, underutilized and misused. Research is needed to evaluate and improve indigenous breeds. DAD-IS serves as a central and reliable source of aids for experimental design and data analysis, to increase the cost-effectiveness of, and capacity for research.



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DAD-IS - "window of the world" for teaching, research and management support for animal genetic resources. DAD-IS also serves as the focused entry point to link with other databases and information sources related to domestic animal genetic resources, sustainable use and conservation issues.

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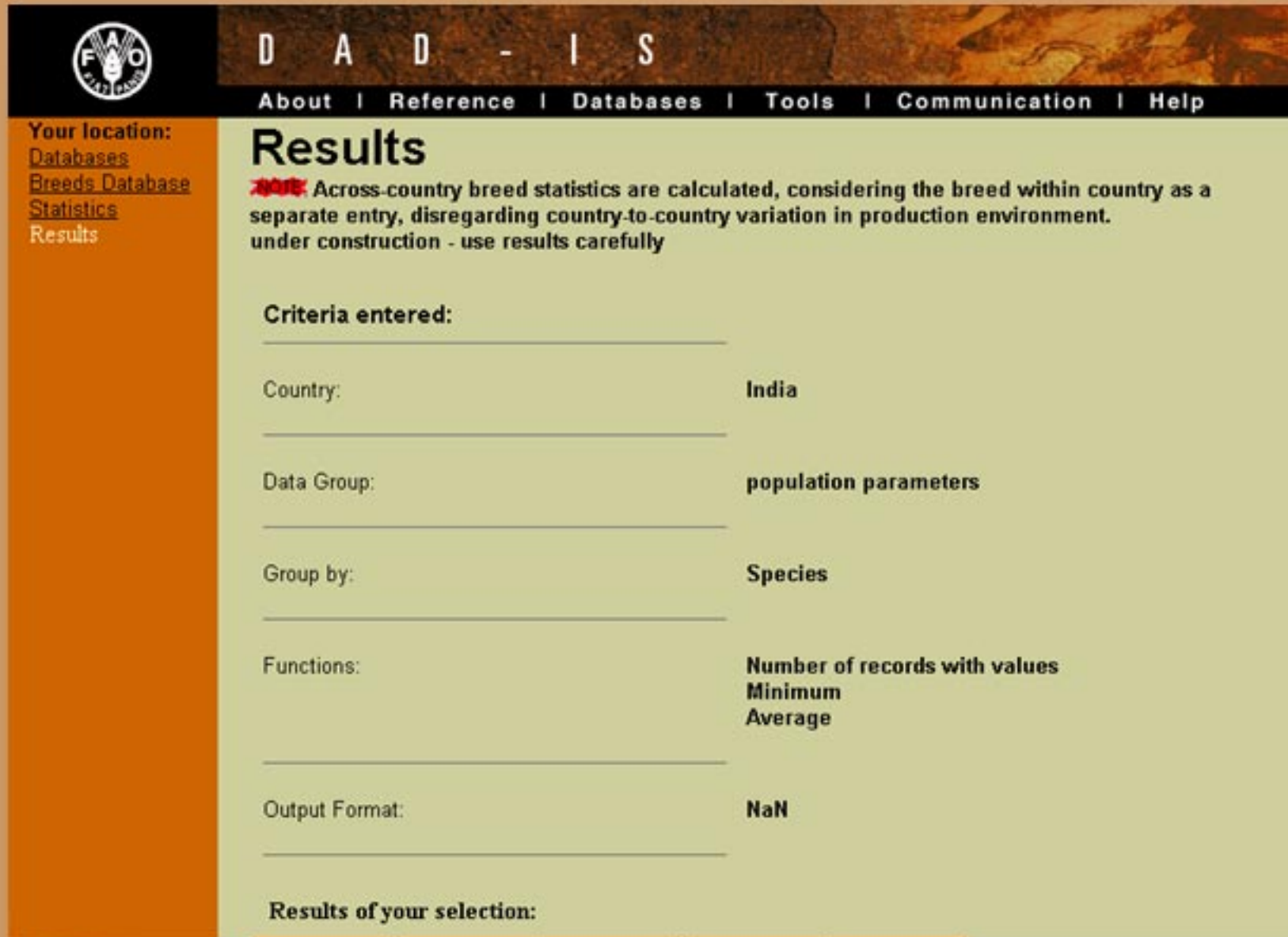
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DAD-IS supports monitoring and conservation priority setting



The screenshot displays the DAD-IS web application interface. At the top left is the FAO logo. The main header contains the text "D A D - I S" and a navigation menu with links for "About", "Reference", "Databases", "Tools", "Communication", and "Help". On the left side, there is a vertical orange bar with the text "Your location:" and a list of links: "Databases", "Breeds Database", "Statistics", and "Results". The main content area is titled "Results" and features a red warning icon and text: "Across-country breed statistics are calculated, considering the breed within country as a separate entry, disregarding country-to-country variation in production environment. under construction - use results carefully". Below this, the "Criteria entered:" section lists several search parameters: "Country: India", "Data Group: population parameters", "Group by: Species", "Functions: Number of records with values, Minimum, Average", and "Output Format: NaN". At the bottom of the criteria section, it says "Results of your selection:". On the right side of the page, there are five orange buttons: "Next page", "Previous page", "Section Start", "Go to this page", and "Go to site map".

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Go to site map

DAD-IS Provides Guidance on AnGR Management

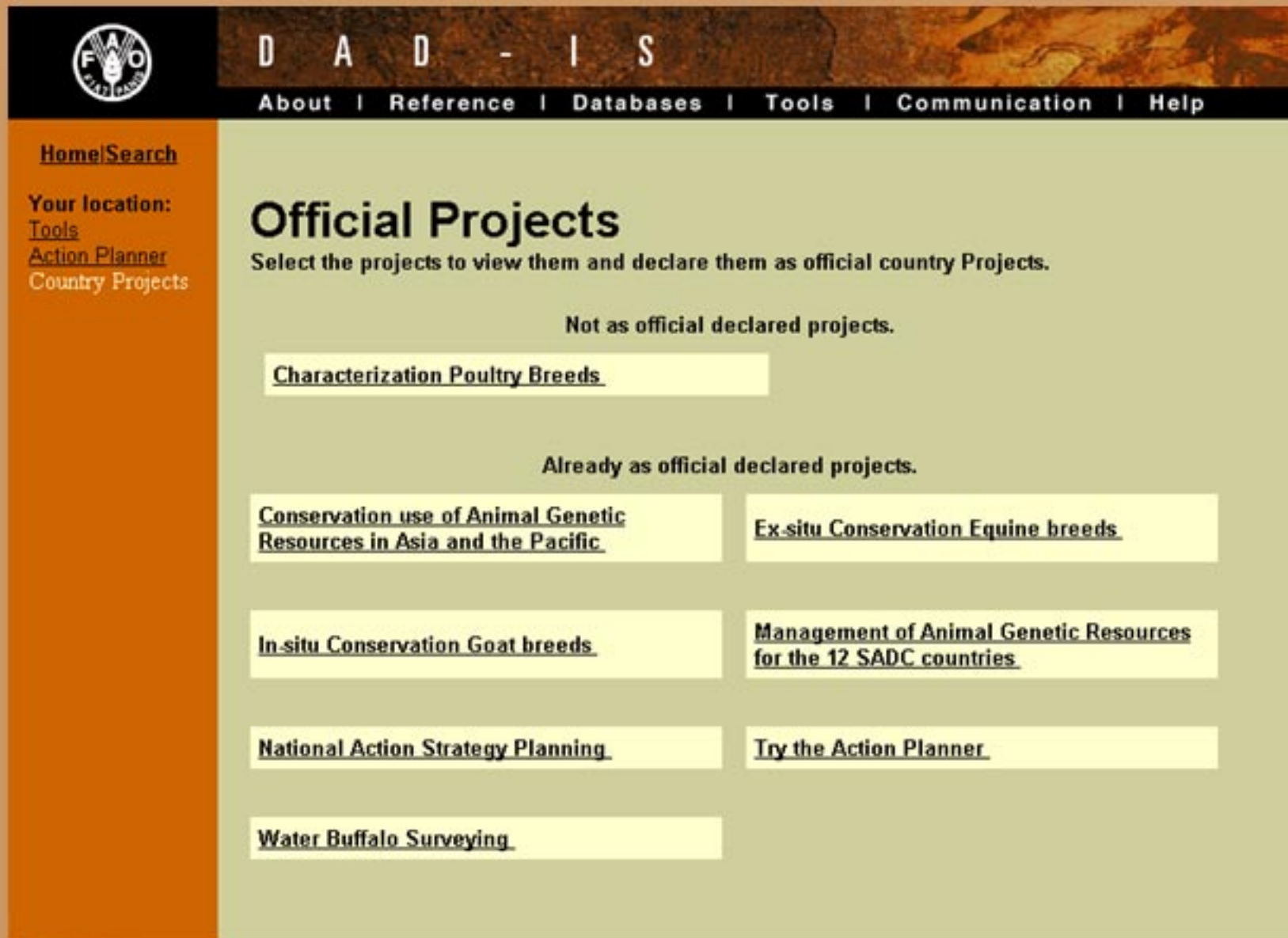
Guidelines for the management of AnGR are available in the Virtual Library

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- Previous page
- Section Start
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- Go to site map

DAD-IS provides customized project management support

On-line project management contributes to cost-effective national, regional and global management of AnGR



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[Go to site map](#)

DAD-IS supports access to AnGR adapted to specific environments

Users can query DAD-IS for AnGR adapted to climate, disease and other stresses

The screenshot shows the DAD-IS website's search interface. At the top left is the FAO logo. The header contains the text 'D A D - I S' and a navigation menu with links for 'About', 'Reference', 'Databases', 'Tools', 'Communication', and 'Help'. On the left side, there is a vertical orange bar with the text 'Home | Search' and a list of links: 'Your location:', 'Databases', 'Breeds Database', and 'Search Databases'. The main content area is titled 'Search Databases' and includes a descriptive paragraph: 'List of breeds from certain countries, species or with certain breed names. Select one or more countries/species and/or enter a breed name or part of a breed name. Scroll through the selection areas. To select one item, click on it. To select more than one, keep the "Ctrl" button pressed while clicking.' Below this text are three tabs: 'Selection manager', 'Statistics', and 'Breed comparison'. A 'Template' link is also visible. The 'Country' section features a dropdown menu with options: Afghanistan, Albania, Algeria, and American Samoa (USA). The 'Species' section features a dropdown menu with options: Buffalo, Cattle (highlighted), Yak (domestic), and Goat. At the bottom, there is a section titled 'Breed Names (Most Common Breed Name and Other Names)'.

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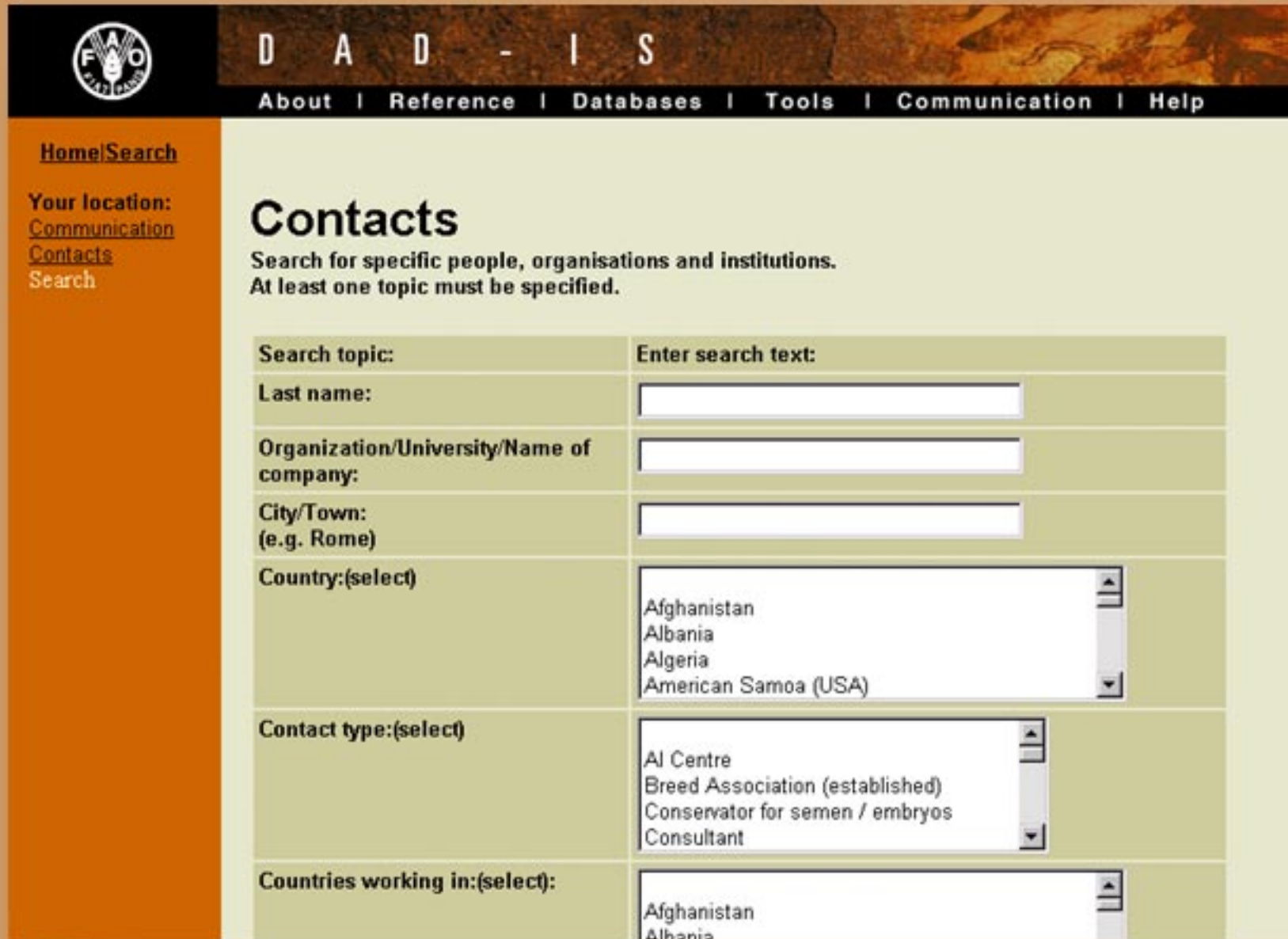
Section Start

Go to this page

Go to site map

DAD-IS enables sourcing of people and organizations

Users can query DAD-IS for contacts by country or function



The screenshot shows the DAD-IS website interface. At the top, there is a navigation bar with the DAD-IS logo and menu items: About, Reference, Databases, Tools, Communication, and Help. The main content area is titled "Contacts" and includes a search form with the following fields:

Search topic:	Enter search text:
Last name:	<input type="text"/>
Organization/University/Name of company:	<input type="text"/>
City/Town: (e.g. Rome)	<input type="text"/>
Country:(select)	<input type="text" value="Afghanistan"/> Afghanistan Albania Algeria American Samoa (USA)
Contact type:(select)	<input type="text" value="AI Centre"/> AI Centre Breed Association (established) Conservator for semen / embryos Consultant
Countries working in:(select):	<input type="text" value="Afghanistan"/> Afghanistan Albania

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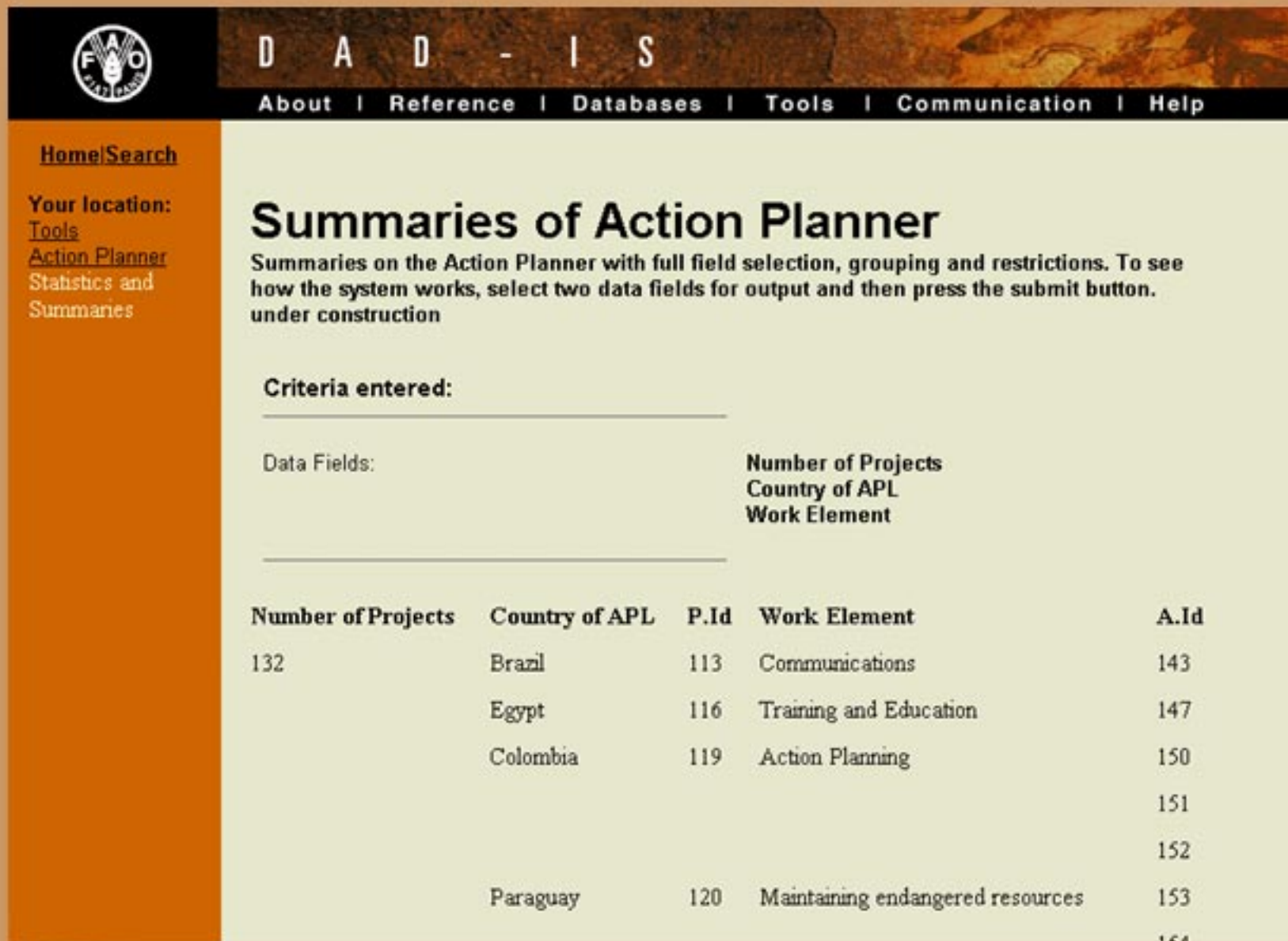
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DAD-IS supports national, regional and global reporting



The image shows a screenshot of the DAD-IS website. At the top left is the FAO logo. The header contains the text 'D A D - I S' and a navigation menu with links: 'About | Reference | Databases | Tools | Communication | Help'. On the left side, there is a vertical orange bar with the text 'Home/Search' and a list of links: 'Your location:', 'Tools', 'Action Planner', 'Statistics and Summaries'. The main content area is titled 'Summaries of Action Planner' and includes a sub-header: 'Summaries on the Action Planner with full field selection, grouping and restrictions. To see how the system works, select two data fields for output and then press the submit button. under construction'. Below this, there is a section 'Criteria entered:' followed by a horizontal line. Underneath, there are two columns of text: 'Data Fields:' and 'Number of Projects'. The 'Data Fields:' column lists 'Country of APL' and 'Work Element'. The 'Number of Projects' column lists 'Country of APL' and 'Work Element'. Below this, there is a table with the following columns: 'Number of Projects', 'Country of APL', 'P.Id', 'Work Element', and 'A.Id'. The table contains the following data rows:

Number of Projects	Country of APL	P.Id	Work Element	A.Id
132	Brazil	113	Communications	143
	Egypt	116	Training and Education	147
	Colombia	119	Action Planning	150
				151
				152
	Paraguay	120	Maintaining endangered resources	153
				154

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DAD-IS supports national, regional and global reporting



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[Home](#) | [Search](#)

Your location:
[Tools](#)
[Action Planner](#)
[Statistics and Summaries](#)

Summaries of Action Planner

Summaries on the Action Planner with full field selection, grouping and restrictions. To see how the system works, select two data fields for output and then press the submit button.
under construction

Criteria entered:

Data Fields: _____

Number of Projects
Country of APL
Work Element

Number of Projects	Country of APL	P.Id	Work Element	A.Id
132	Brazil	113	Communications	143
	Egypt	116	Training and Education	147
	Colombia	119	Action Planning	150
				151
				152
	Paraguay	120	Maintaining endangered resources	153
				154

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DAD-IS IS

- **A COMMUNICATION AND INFORMATION TOOL** FOR USE BY COUNTRIES
- **A CLEARING-HOUSE** FOR INFORMATION AND DATA
- **A SECURE SYSTEM** GIVING COUNTRIES CONTROL OVER COLLATING, RELEASING AND MAINTAINING THEIR DATA
- **AN ELEMENT OF THE STRATEGIC FRAMEWORK** FOR THE MANAGEMENT OF FARM ANIMAL GENETIC RESOURCES

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DAD-IS IS

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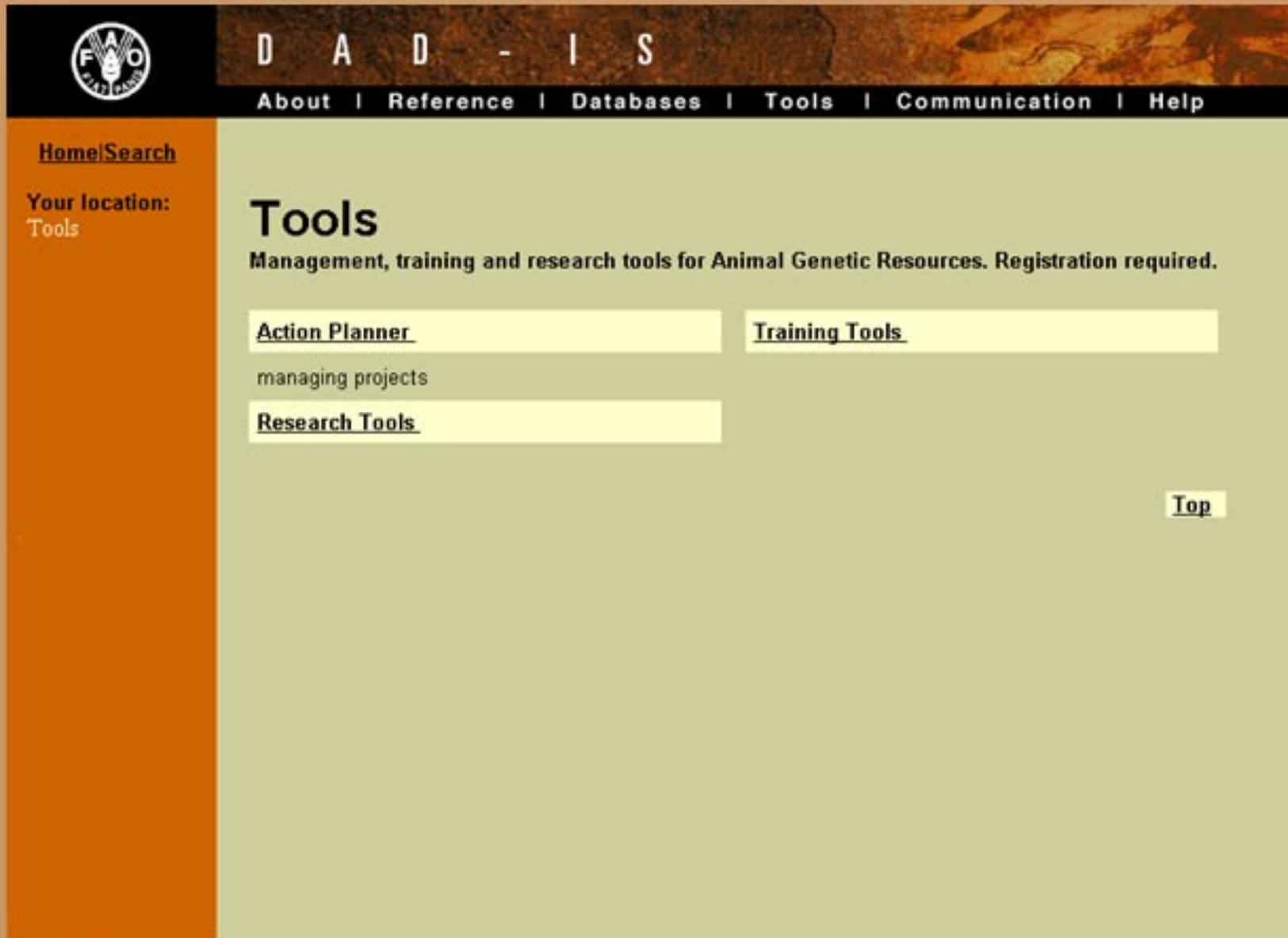
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DAD-IS tools build country capacity

The action planner, training and research tools build country management capacity



The screenshot shows the DAD-IS website interface. At the top left is the FAO logo. The header contains the text 'D A D - I S' and a navigation menu with links for 'About', 'Reference', 'Databases', 'Tools', 'Communication', and 'Help'. A left sidebar contains 'Home/Search' and 'Your location: Tools'. The main content area is titled 'Tools' and includes the subtitle 'Management, training and research tools for Animal Genetic Resources. Registration required.' Below this are three highlighted boxes: 'Action Planner' (with subtext 'managing projects'), 'Training Tools', and 'Research Tools'. A 'Top' link is located at the bottom right of the main content area.

[Home/Search](#)

Your location:
Tools

Tools

Management, training and research tools for Animal Genetic Resources. Registration required.

[Action Planner](#)
managing projects

[Training Tools](#)

[Research Tools](#)

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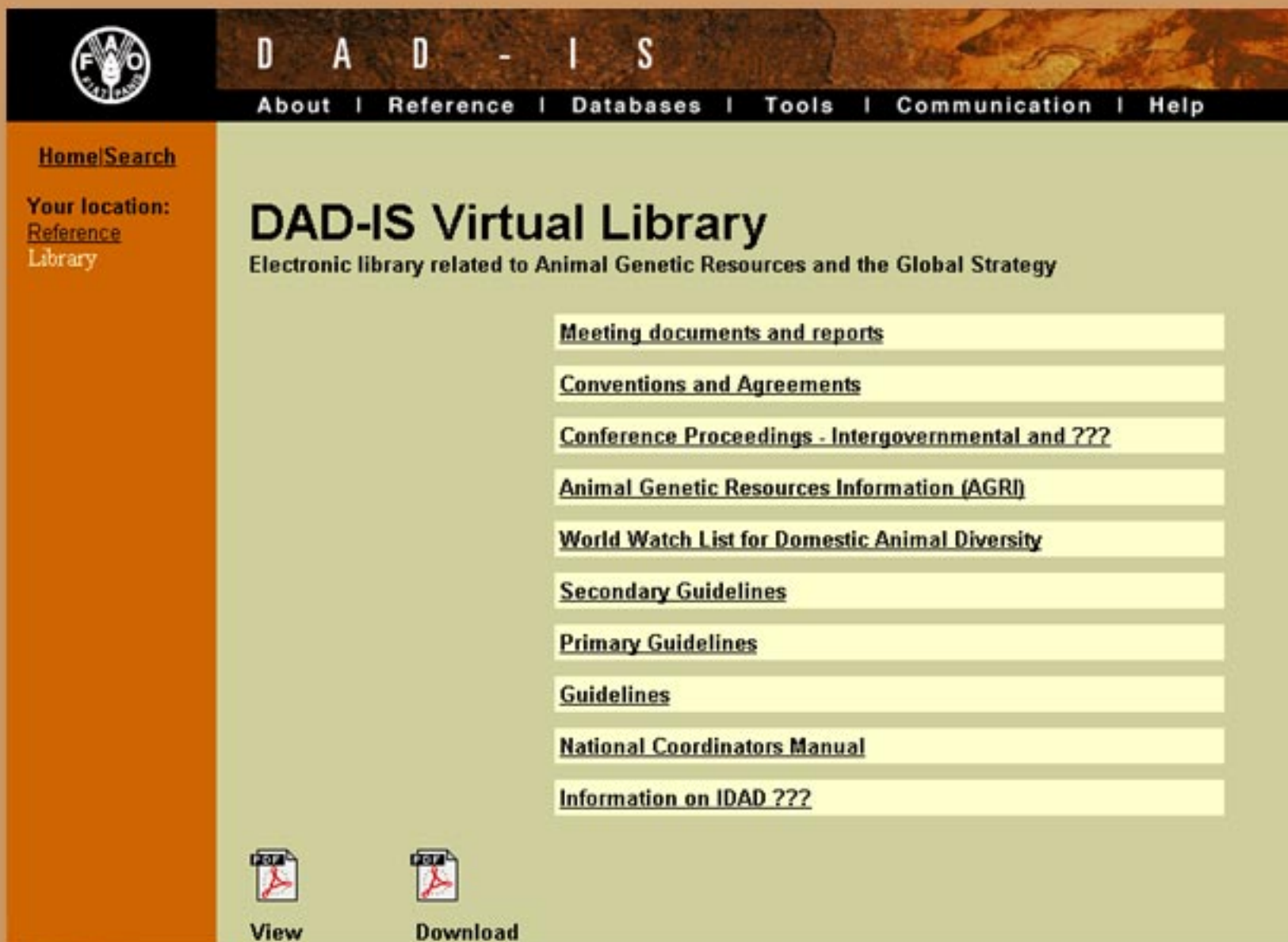
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DAD-IS Virtual Library

The electronic library provides the range of key documents which users can easily download or print



The screenshot shows the DAD-IS Virtual Library website. At the top left is the FAO logo. The header contains the text 'D A D - I S' and a navigation menu with links for 'About', 'Reference', 'Databases', 'Tools', 'Communication', and 'Help'. A left sidebar has a 'Home/Search' link and a breadcrumb trail: 'Your location: Reference Library'. The main content area features the title 'DAD-IS Virtual Library' and the subtitle 'Electronic library related to Animal Genetic Resources and the Global Strategy'. Below this is a list of document categories, each with a PDF icon: 'Meeting documents and reports', 'Conventions and Agreements', 'Conference Proceedings - Intergovernmental and ???', 'Animal Genetic Resources Information (AGRI)', 'World Watch List for Domestic Animal Diversity', 'Secondary Guidelines', 'Primary Guidelines', 'Guidelines', 'National Coordinators Manual', and 'Information on IDAD ???'. At the bottom left of the main area are 'View' and 'Download' buttons, each with a PDF icon.

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DAD-IS promotes networking

Users can search the database for those with similar interests or make contact via the bulletin board

DAD-IS
About | Reference | Databases | Tools | Communication | Help

[Home](#) | [Search](#)

Your location:
[Communication](#)
[Bulletin Board](#)
[Post](#)

Bulletin Board - Post

Send messages of interest to DAD-IS users.
meetings ... books ... publications ... experiences ... questions

Topic	Text
Valid until:	<input type="text" value="8/24/98"/> Maximum two years from now.
Subject:	<input type="text"/>
Text:	<input type="text"/>

to post the announcement. to reset the Form.

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DAD-IS promotes networking

Users can search the database for those with similar interests or make contact via the bulletin board

DAD-IS
About | Reference | Databases | Tools | Communication | Help

[Home](#) | [Search](#)

Your location:
[Communication](#)
[Bulletin Board](#)
[Post](#)

Bulletin Board - Post

Send messages of interest to DAD-IS users.
meetings ... books ... publications ... experiences ... questions

Topic	Text
Valid until:	<input type="text" value="8/24/98"/> Maximum two years from now.
Subject:	<input type="text"/>
Text:	<input type="text"/>

to post the announcement. to reset the Form.

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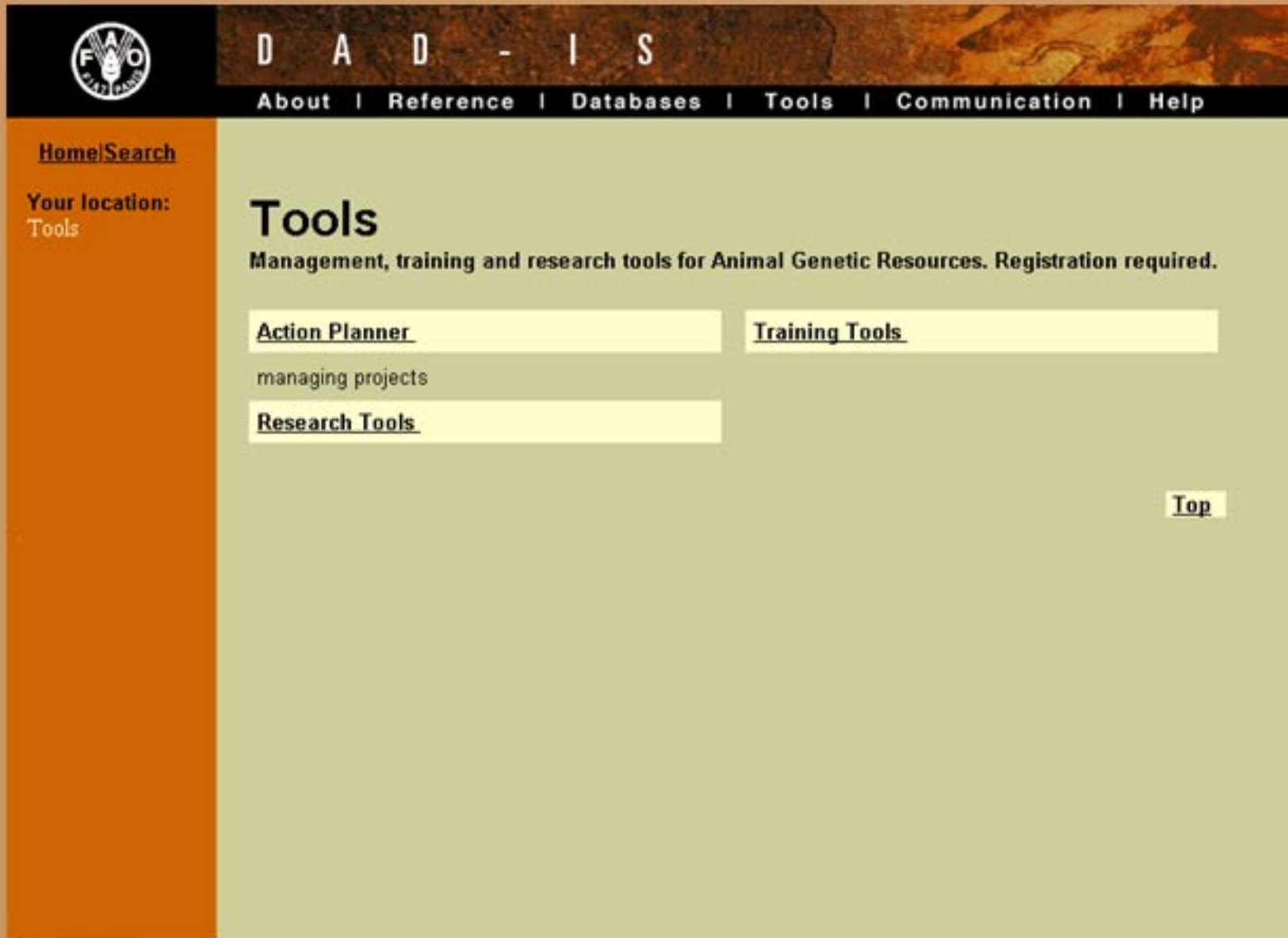
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DAD-IS tools build country capacity

The action planner, training and research tools build country management capacity



The screenshot shows the DAD-IS website interface. At the top left is the FAO logo. The header contains the text 'D A D - I S' and a navigation menu with links for 'About', 'Reference', 'Databases', 'Tools', 'Communication', and 'Help'. A left sidebar contains 'Home/Search' and 'Your location: Tools'. The main content area is titled 'Tools' and includes the text 'Management, training and research tools for Animal Genetic Resources. Registration required.' Below this are three highlighted boxes: 'Action Planner' (with subtext 'managing projects'), 'Training Tools', and 'Research Tools'. A 'Top' link is located at the bottom right of the main content area.

Home/Search

Your location:
Tools

Tools

Management, training and research tools for Animal Genetic Resources. Registration required.

[Action Planner](#)
managing projects

[Training Tools](#)

[Research Tools](#)

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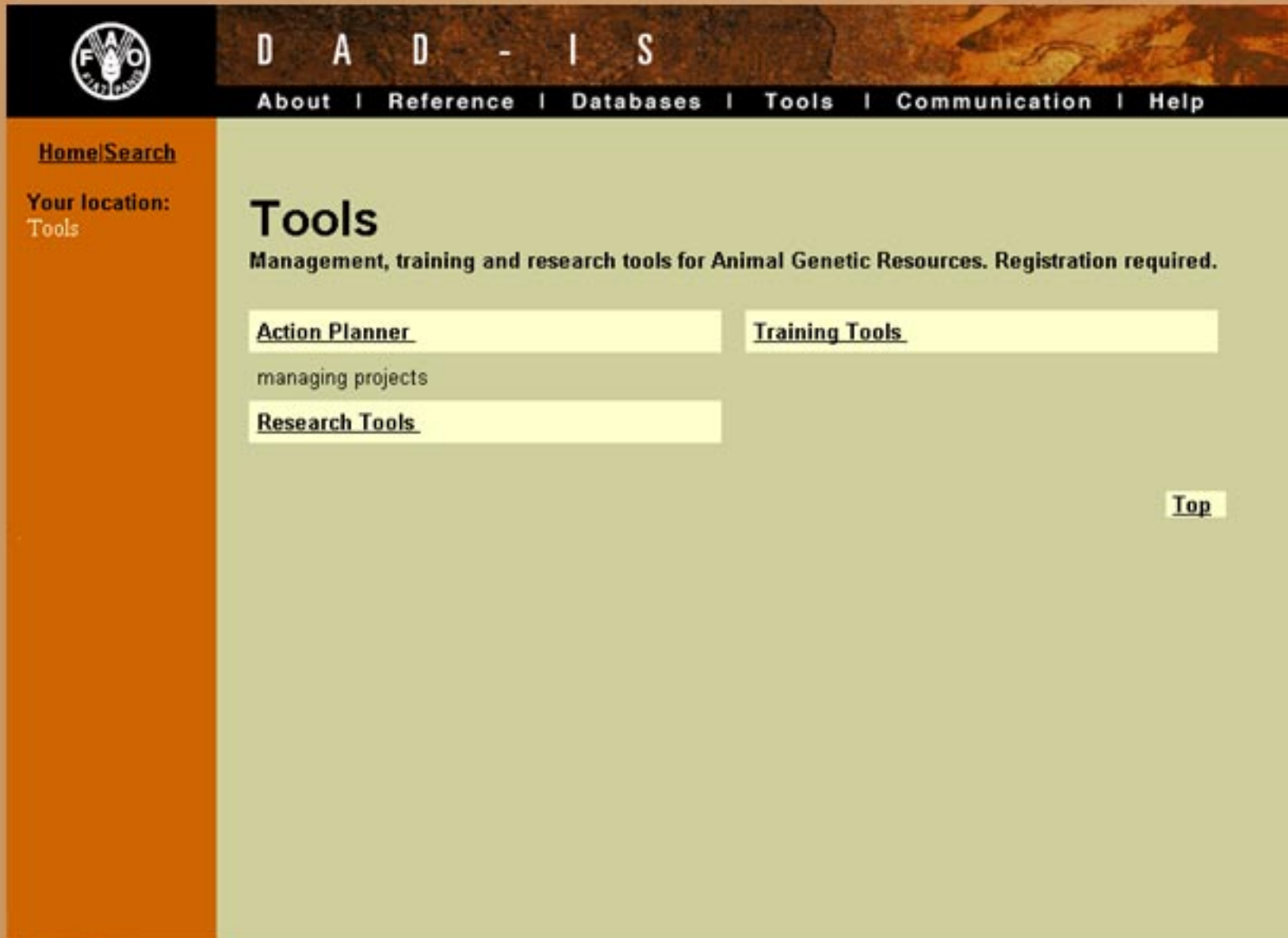
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DAD-IS tools build country capacity

The action planner, training and research tools build country management capacity



The screenshot shows the DAD-IS website interface. At the top left is the FAO logo. The header contains the text 'D A D - I S' and a navigation menu with links for 'About', 'Reference', 'Databases', 'Tools', 'Communication', and 'Help'. On the left side, there is a vertical orange bar with the text 'Home/Search', 'Your location:', and 'Tools'. The main content area has a light green background and features the title 'Tools' followed by the subtitle 'Management, training and research tools for Animal Genetic Resources. Registration required.' Below this, there are three highlighted boxes: 'Action Planner' (with the subtext 'managing projects'), 'Training Tools', and 'Research Tools'. A 'Top' link is located at the bottom right of the main content area.

[Home/Search](#)

Your location:
Tools

Tools

Management, training and research tools for Animal Genetic Resources. Registration required.

[Action Planner](#)
managing projects

[Training Tools](#)

[Research Tools](#)

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[Search](#)

DAD-IS IS

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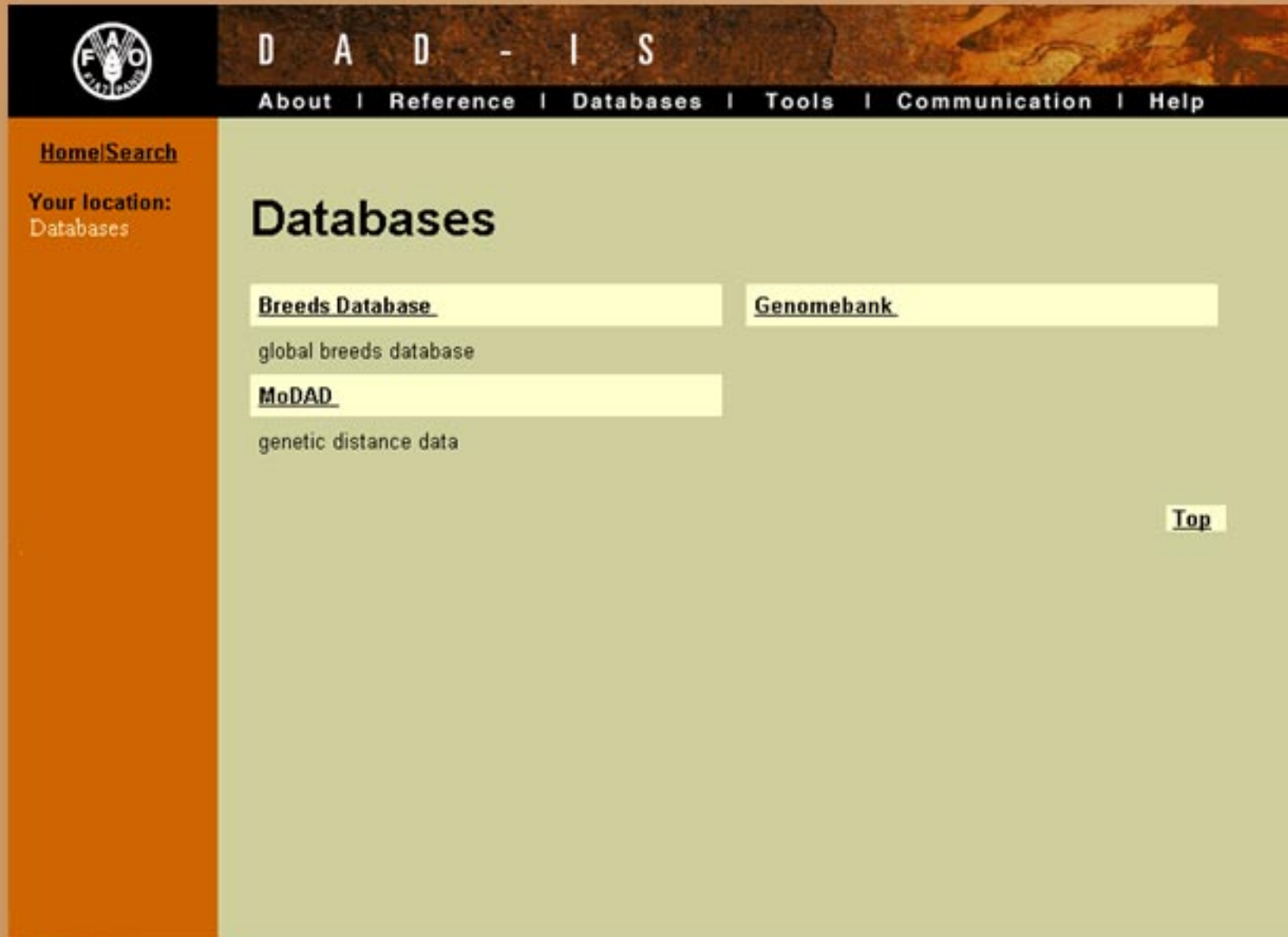
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Secure databases for country use

The many databases on DAD-IS support all aspects of AnGR management, action planning, genetic diversity evaluation and access to contacts



The screenshot shows the DAD-IS website interface. At the top left is the FAO logo. The main header contains the text "D A D - I S" and a navigation menu with links for "About", "Reference", "Databases", "Tools", "Communication", and "Help". On the left side, there is a vertical orange bar with the text "Home/Search" and "Your location: Databases". The main content area is titled "Databases" and lists three database entries: "Breeds Database" (global breeds database), "Genomebank", and "MoDAD" (genetic distance data). A "Top" link is located at the bottom right of the main content area.

D A D - I S
About | Reference | Databases | Tools | Communication | Help

Home/Search
Your location:
Databases

Databases

Breeds Database
global breeds database

Genomebank

MoDAD
genetic distance data

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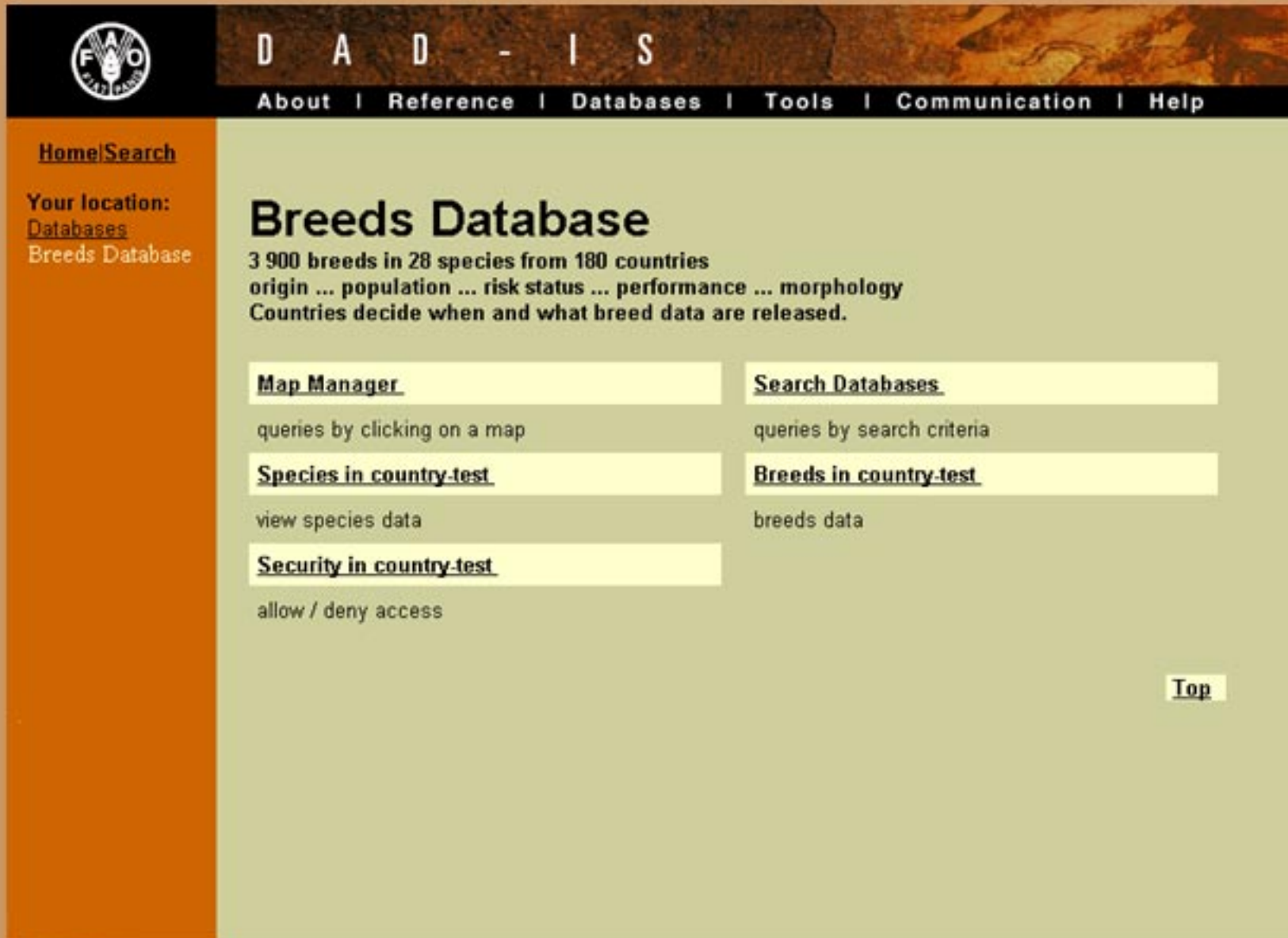
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DAD-IS supports country database needs

Developed for country use, the breeds database supports the characterization, development, use and maintenance of AnGR. Data is maintained by each country



The screenshot shows the DAD-IS website interface. At the top left is the FAO logo. The main header contains the text 'D A D - I S' and a navigation menu with links for 'About', 'Reference', 'Databases', 'Tools', 'Communication', and 'Help'. On the left side, there is a vertical orange sidebar with the text 'Home/Search', 'Your location: Databases', and 'Breeds Database'. The main content area is titled 'Breeds Database' and includes the text '3 900 breeds in 28 species from 180 countries', 'origin ... population ... risk status ... performance ... morphology', and 'Countries decide when and what breed data are released.' Below this, there are four yellow boxes with links: 'Map Manager' (queries by clicking on a map), 'Search Databases' (queries by search criteria), 'Species in country-test' (view species data), and 'Breeds in country-test' (breeds data). A 'Security in country-test' link is also present with the text 'allow / deny access'. A 'Top' link is located at the bottom right of the main content area.

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DAD-IS supports access to AnGR adapted to specific environments

Users can query DAD-IS for AnGR adapted to climate, disease and other stresses

The screenshot shows the DAD-IS website's search interface. At the top left is the FAO logo. The header contains the text 'D A D - I S' and a navigation menu with links for 'About', 'Reference', 'Databases', 'Tools', 'Communication', and 'Help'. On the left side, there is a vertical orange bar with the text 'Home | Search' and a list of links: 'Your location:', 'Databases', 'Breeds Database', and 'Search Databases'. The main content area is titled 'Search Databases' and includes a descriptive paragraph: 'List of breeds from certain countries, species or with certain breed names. Select one or more countries/species and/or enter a breed name or part of a breed name. Scroll through the selection areas. To select one item, click on it. To select more than one, keep the "Ctrl" button pressed while clicking.' Below this text are three tabs: 'Selection manager', 'Statistics', and 'Breed comparison'. To the right of these tabs is a 'Template' link. The 'Selection manager' tab is active and contains two dropdown menus. The first is labeled 'Country' and lists 'Afghanistan', 'Albania', 'Algeria', and 'American Samoa (USA)'. The second is labeled 'Species' and lists 'Buffalo', 'Cattle', 'Yak (domestic)', and 'Goat', with 'Cattle' selected. Below the dropdowns is a section titled 'Breed Names (Most Common Breed Name and Other Names)'.

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Statistics and Summaries support users needs

DAD - I S
About | Reference | Databases | Tools | Communication | Help

[Home/ Search](#)

Your location:
[Databases](#)
[Breeds Database](#)
[Search Databases](#)

Search Databases

List of breeds from certain countries, species or with certain breed names. Select one or more countries/species and/or enter a breed name or part of a breed name. Scroll through the selection areas. To select one item, click on it. To select more than one, keep the "Ctrl" button pressed while clicking.

[Template](#)

Selection manager | **Statistics** | **Breed comparison**

Country

- Afghanistan
- Albania
- Algeria
- American Samoa (USA)

Species

- Buffalo
- Cattle**
- Yak (domestic)
- Goat

Breed Names (Most Common Breed Name and Other Names)

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Users define summaries and statistics required

FAO
D A D - I S

About | Reference | Databases | Tools | Communication | Help

Your location:
[Databases](#)
[Breeds Database](#)
[Statistics](#)

Statistics and Summaries

Descriptive statistics and summaries on the breeds database with limited field selection and one grouping. To see how the system works, press the submit button without changing anything. Scroll through the selection areas. To select one item, click on it. To select more than one, keep the "Ctrl" button pressed while clicking.

[Template](#)

Selection manager **Statistics** **Breed comparison**

Country

- Hong Kong
- Hungary
- Iceland
- India**
- Indonesia

Species

- Buffalo**
- Cattle
- Yak (domestic)
- Goat

Breed Names (Most Common Breed Name and Other Names)

any part of field

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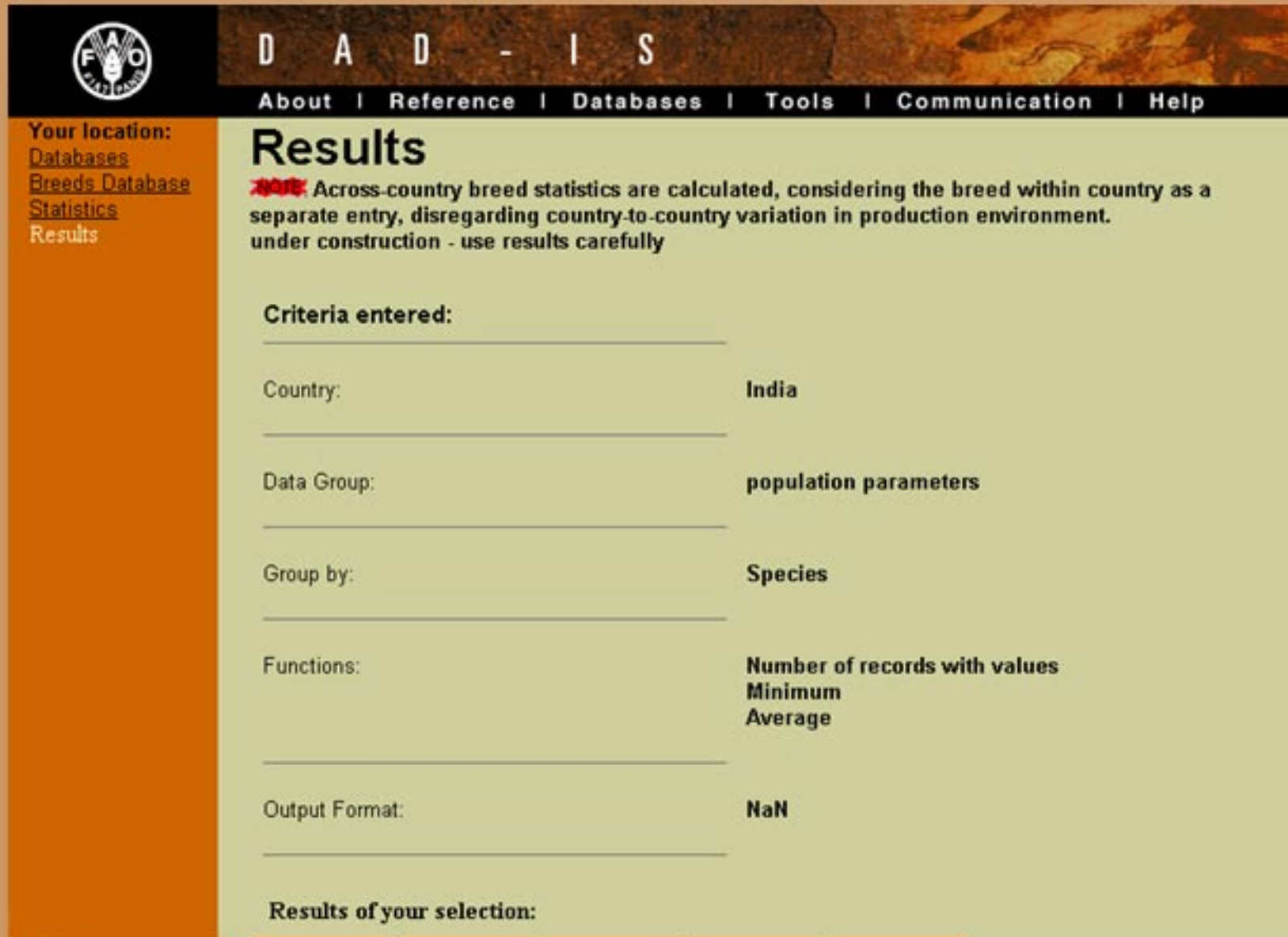
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DAD-IS supports monitoring and conservation priority setting



The screenshot displays the DAD-IS web application interface. At the top left is the FAO logo. The main header contains the text "D A D - I S" and a navigation menu with links for "About", "Reference", "Databases", "Tools", "Communication", and "Help". On the left side, there is a vertical orange sidebar with the text "Your location:" followed by a list of links: "Databases", "Breeds Database", "Statistics", and "Results". The main content area has a light green background and features a "Results" section. A red warning icon and text state: "NOTE: Across-country breed statistics are calculated, considering the breed within country as a separate entry, disregarding country-to-country variation in production environment. under construction - use results carefully". Below this, the "Criteria entered:" section lists several search parameters: "Country: India", "Data Group: population parameters", "Group by: Species", "Functions: Number of records with values, Minimum, Average", and "Output Format: NaN". At the bottom of the criteria section, it says "Results of your selection:". On the right side of the page, there are five orange buttons: "Next page", "Previous page", "Section Start", "Go to this page", and "Go to site map".

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Section Start

Go to this page

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DAD-IS promotes networking

Users can search the database for those with similar interests or make contact via the bulletin board

D A D - I S
About | Reference | Databases | Tools | Communication | Help

[Home](#) | [Search](#)

Your location:
[Communication](#)
[Bulletin Board](#)
[Post](#)

Bulletin Board - Post

Send messages of interest to DAD-IS users.
meetings ... books ... publications ... experiences ... questions

Topic	Text
Valid until:	<input type="text" value="8/24/98"/> Maximum two years from now.
Subject:	<input type="text"/>
Text:	<input type="text"/>

to post the announcement. to reset the Form.

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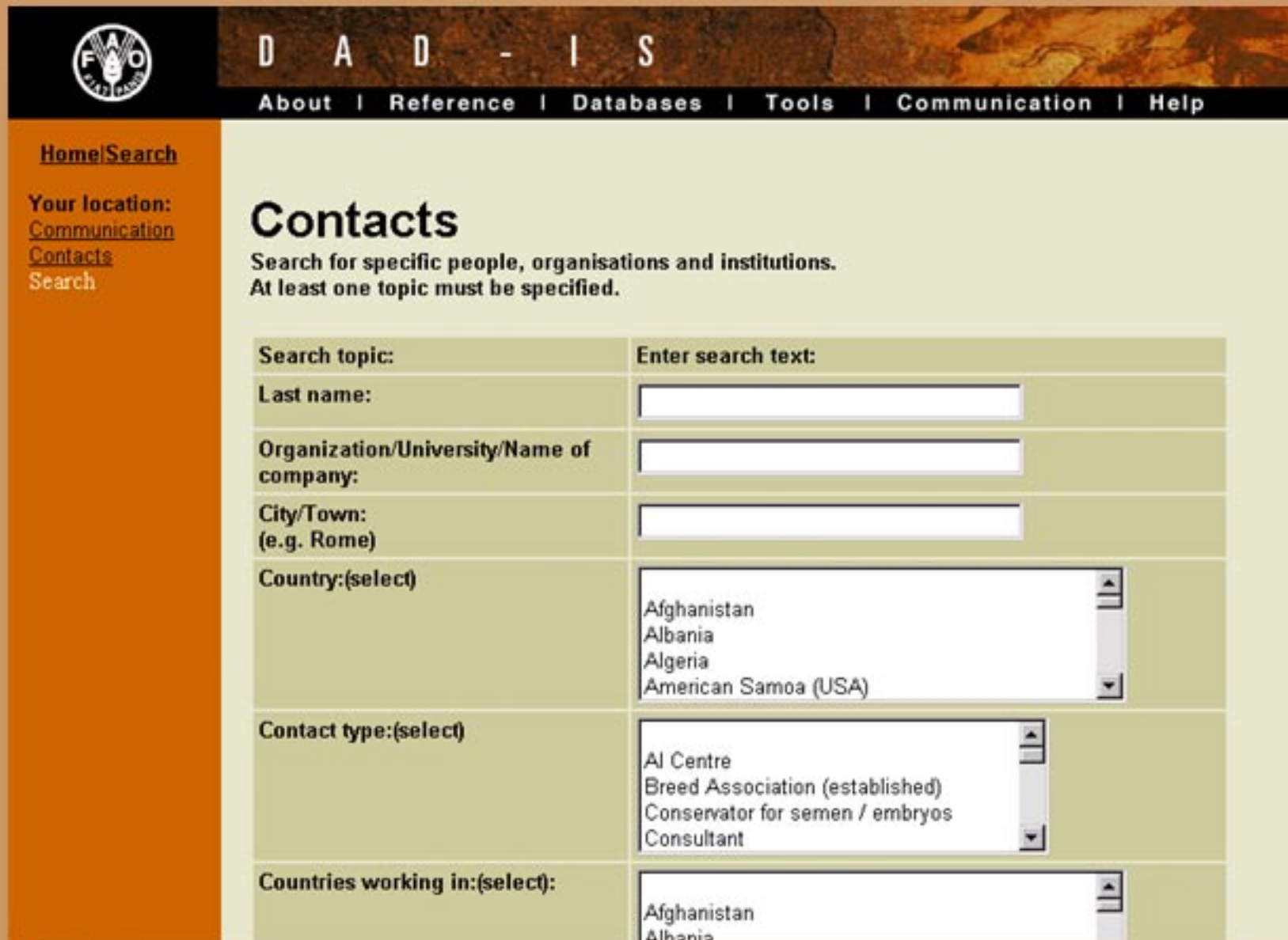
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DAD-IS enables sourcing of people and organizations

Users can query DAD-IS for contacts by country or function



The screenshot shows the DAD-IS website interface. At the top, there is a navigation bar with the DAD-IS logo and menu items: About, Reference, Databases, Tools, Communication, and Help. Below the navigation bar, the page title is "Contacts" and the subtitle is "Search for specific people, organisations and institutions. At least one topic must be specified." The search form consists of several fields: "Search topic:" with a sub-field "Enter search text:"; "Last name:"; "Organization/University/Name of company:"; "City/Town: (e.g. Rome)"; "Country:(select)" with a dropdown menu showing "Afghanistan", "Albania", "Algeria", and "American Samoa (USA)"; "Contact type:(select)" with a dropdown menu showing "AI Centre", "Breed Association (established)", "Conservator for semen / embryos", and "Consultant"; and "Countries working in:(select)" with a dropdown menu showing "Afghanistan" and "Albania".

Search topic:	Enter search text:
Last name:	<input type="text"/>
Organization/University/Name of company:	<input type="text"/>
City/Town: (e.g. Rome)	<input type="text"/>
Country:(select)	<input type="text" value="Afghanistan"/> Afghanistan Albania Algeria American Samoa (USA)
Contact type:(select)	<input type="text" value="AI Centre"/> AI Centre Breed Association (established) Conservator for semen / embryos Consultant
Countries working in:(select):	<input type="text" value="Afghanistan"/> Afghanistan Albania

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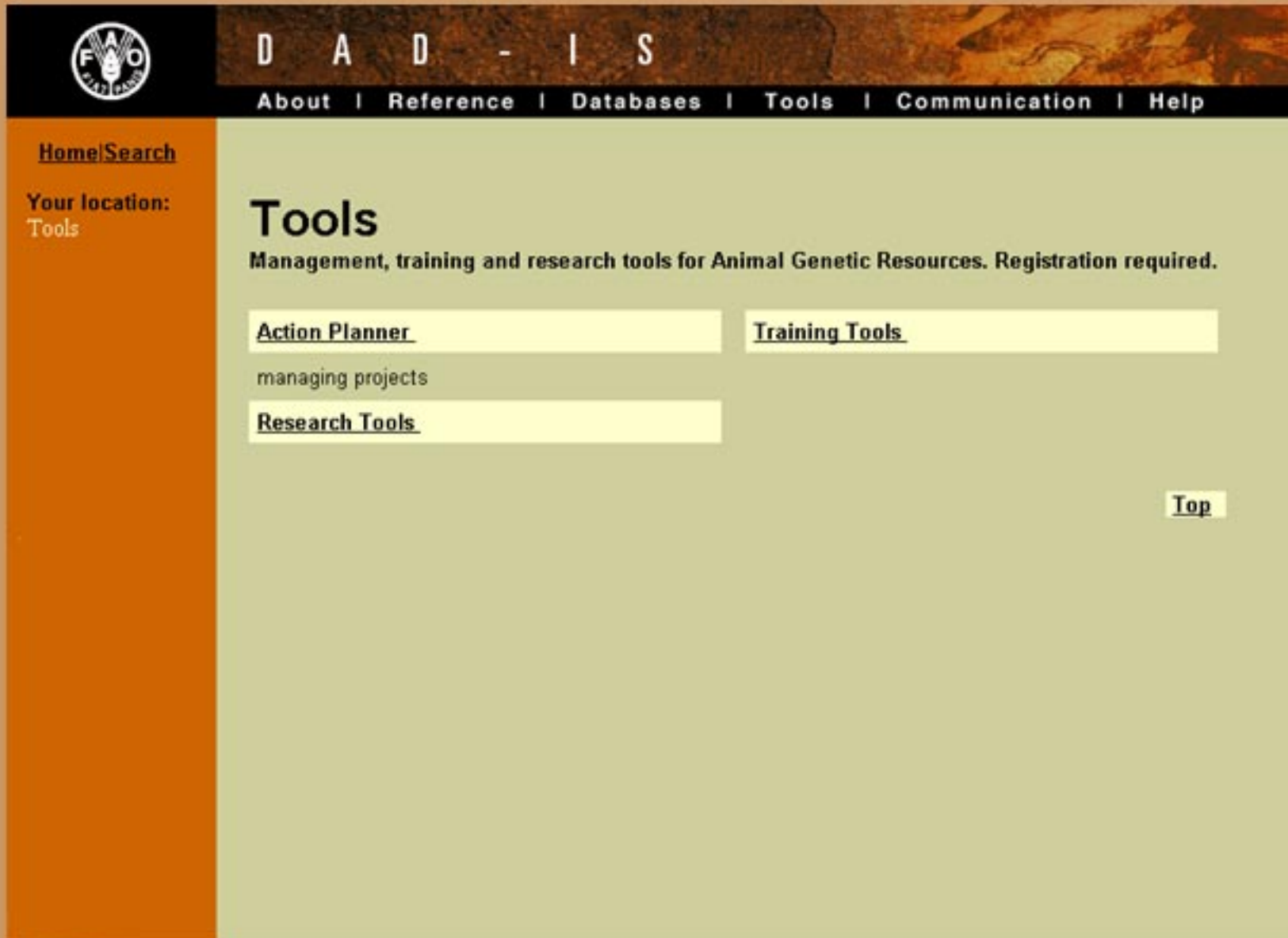
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DAD-IS tools build country capacity

The action planner, training and research tools build country management capacity



The screenshot shows the DAD-IS website interface. At the top left is the FAO logo. The header contains the text 'D A D - I S' and a navigation menu with links for 'About', 'Reference', 'Databases', 'Tools', 'Communication', and 'Help'. On the left side, there is a vertical orange bar with the text 'Home/Search', 'Your location:', and 'Tools'. The main content area has a light green background and features the title 'Tools' followed by the subtitle 'Management, training and research tools for Animal Genetic Resources. Registration required.' Below this, there are three highlighted boxes: 'Action Planner' (with the subtext 'managing projects'), 'Training Tools', and 'Research Tools'. A 'Top' link is located at the bottom right of the main content area.

[Home/Search](#)

Your location:
Tools

Tools

Management, training and research tools for Animal Genetic Resources. Registration required.

[Action Planner](#)
managing projects

[Training Tools](#)

[Research Tools](#)

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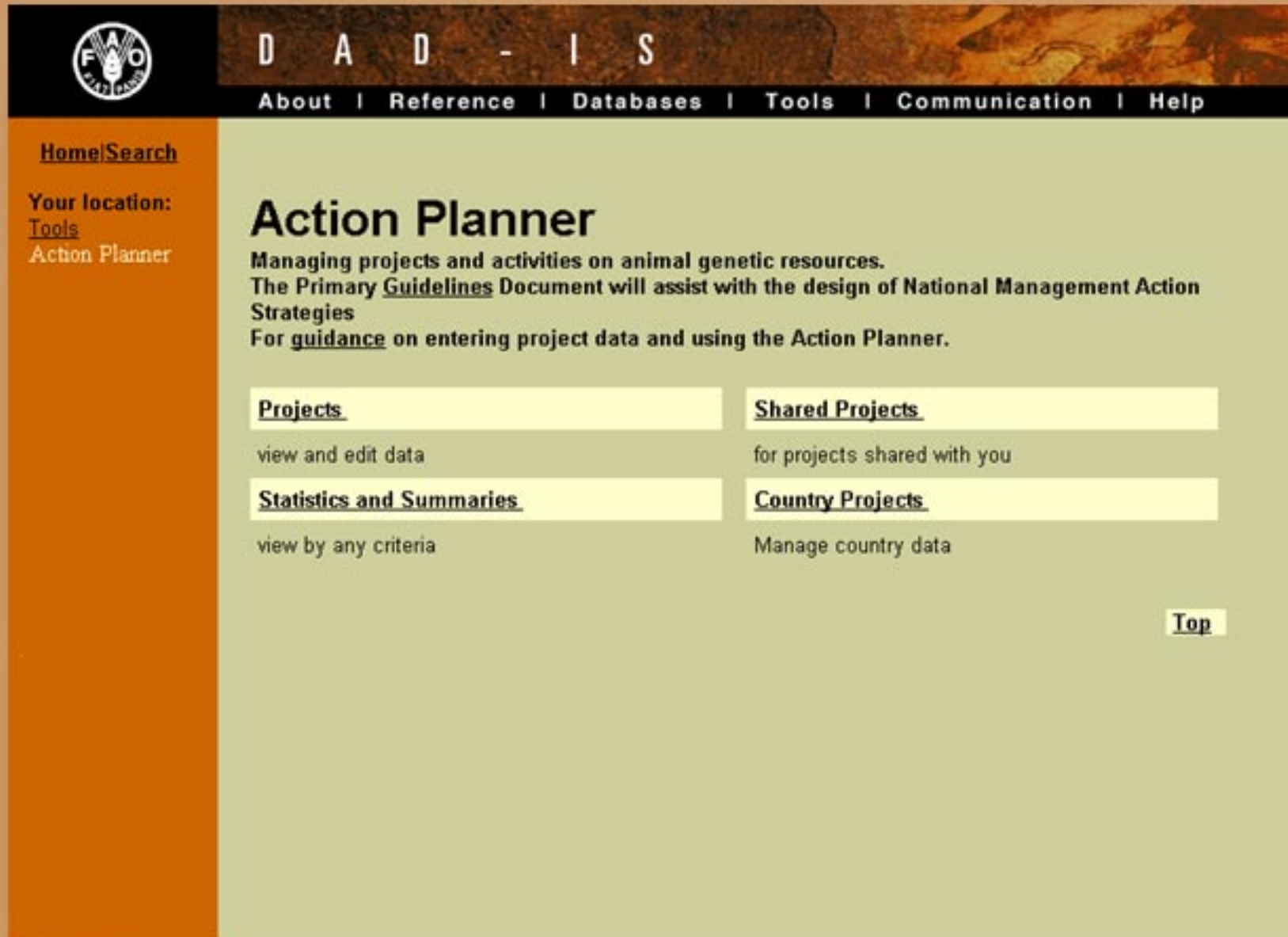
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DAD-IS supports design, implementation, monitoring and reporting of National Action Plans



The screenshot shows the DAD-IS website interface. At the top left is the FAO logo. The header contains the text 'D A D - I S' and a navigation menu with links for 'About', 'Reference', 'Databases', 'Tools', 'Communication', and 'Help'. On the left side, there is a vertical orange sidebar with the text 'Home/Search', 'Your location:', 'Tools', and 'Action Planner'. The main content area has a light green background and features the title 'Action Planner' followed by a description: 'Managing projects and activities on animal genetic resources. The Primary Guidelines Document will assist with the design of National Management Action Strategies. For guidance on entering project data and using the Action Planner.' Below this are four yellow boxes with links: 'Projects' (view and edit data), 'Shared Projects' (for projects shared with you), 'Statistics and Summaries' (view by any criteria), and 'Country Projects' (Manage country data). A 'Top' link is located at the bottom right of the main content area.

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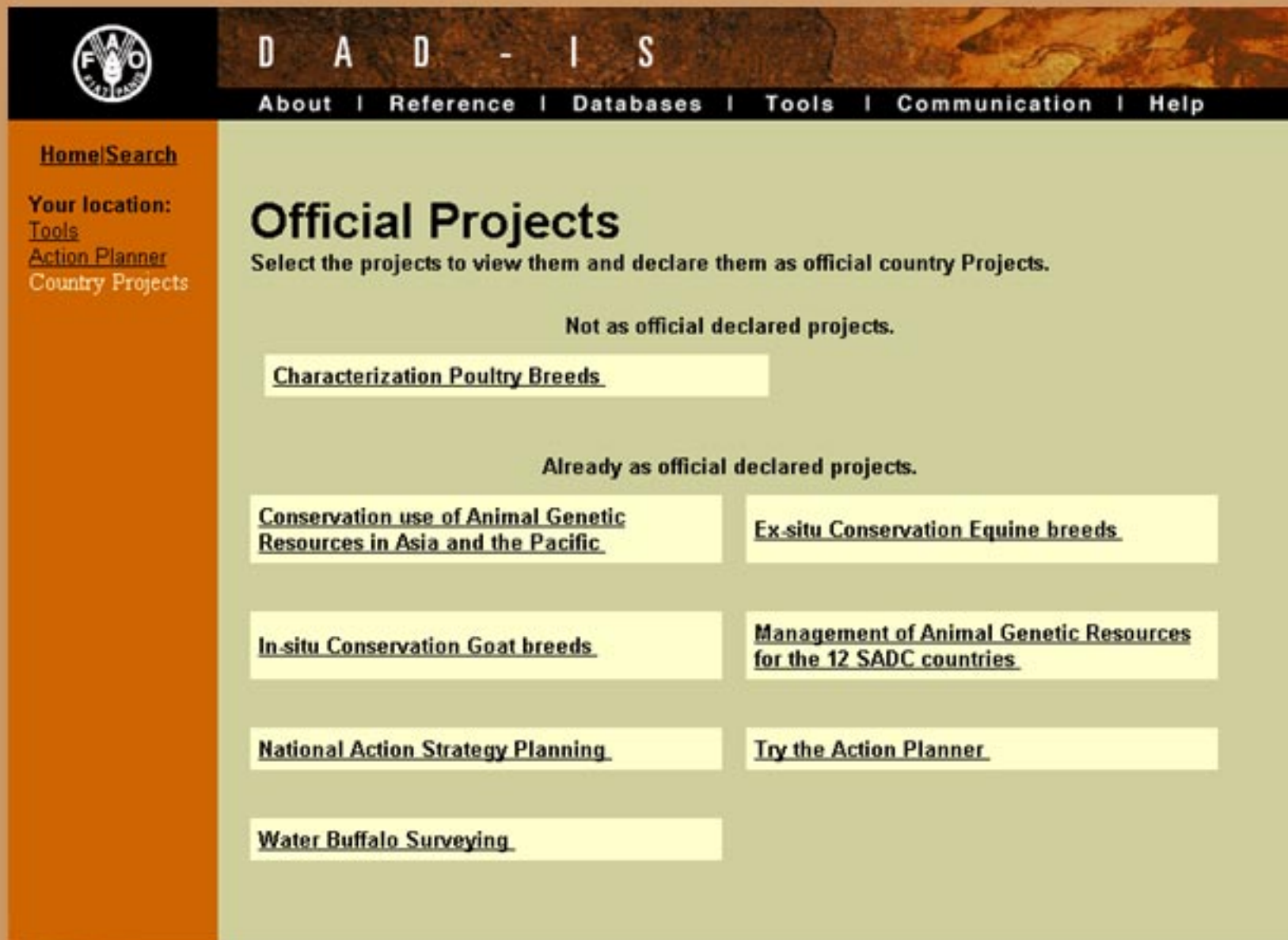
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DAD-IS provides customized project management support

On-line project management contributes to cost-effective national, regional and global management of AnGR



The screenshot shows the DAD-IS website interface. At the top left is the FAO logo. The header contains the text 'D A D - I S' and a navigation menu with links for 'About', 'Reference', 'Databases', 'Tools', 'Communication', and 'Help'. On the left side, there is a vertical orange sidebar with the following links: 'Home/Search', 'Your location:', 'Tools', 'Action Planner', and 'Country Projects'. The main content area is titled 'Official Projects' and includes the instruction: 'Select the projects to view them and declare them as official country Projects.' Below this, there are two sections: 'Not as official declared projects.' and 'Already as official declared projects.' The 'Not as official declared projects.' section contains a single project link: 'Characterization Poultry Breeds'. The 'Already as official declared projects.' section contains seven project links arranged in two columns: 'Conservation use of Animal Genetic Resources in Asia and the Pacific', 'Ex-situ Conservation Equine breeds', 'In-situ Conservation Goat breeds', 'Management of Animal Genetic Resources for the 12 SADC countries', 'National Action Strategy Planning', 'Try the Action Planner', and 'Water Buffalo Surveying'.

Official Projects
Select the projects to view them and declare them as official country Projects.

Not as official declared projects.

[Characterization Poultry Breeds](#)

Already as official declared projects.

[Conservation use of Animal Genetic Resources in Asia and the Pacific](#)

[Ex-situ Conservation Equine breeds](#)

[In-situ Conservation Goat breeds](#)

[Management of Animal Genetic Resources for the 12 SADC countries](#)

[National Action Strategy Planning](#)

[Try the Action Planner](#)

[Water Buffalo Surveying](#)

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DAD-IS supports national, regional and global reporting



D A D - I S

[About](#) | [Reference](#) | [Databases](#) | [Tools](#) | [Communication](#) | [Help](#)

[Home/Search](#)

Your location:
[Tools](#)
[Action Planner](#)
[Statistics and Summaries](#)

Summaries of Action Planner

Summaries on the Action Planner with full field selection, grouping and restrictions. To see how the system works, select two data fields for output and then press the submit button. under construction

Criteria entered:

Data Fields: Number of Projects

Country of APL

Work Element

Number of Projects	Country of APL	P.Id	Work Element	A.Id
132	Brazil	113	Communications	143
	Egypt	116	Training and Education	147
	Colombia	119	Action Planning	150
				151
				152
	Paraguay	120	Maintaining endangered resources	153
				154

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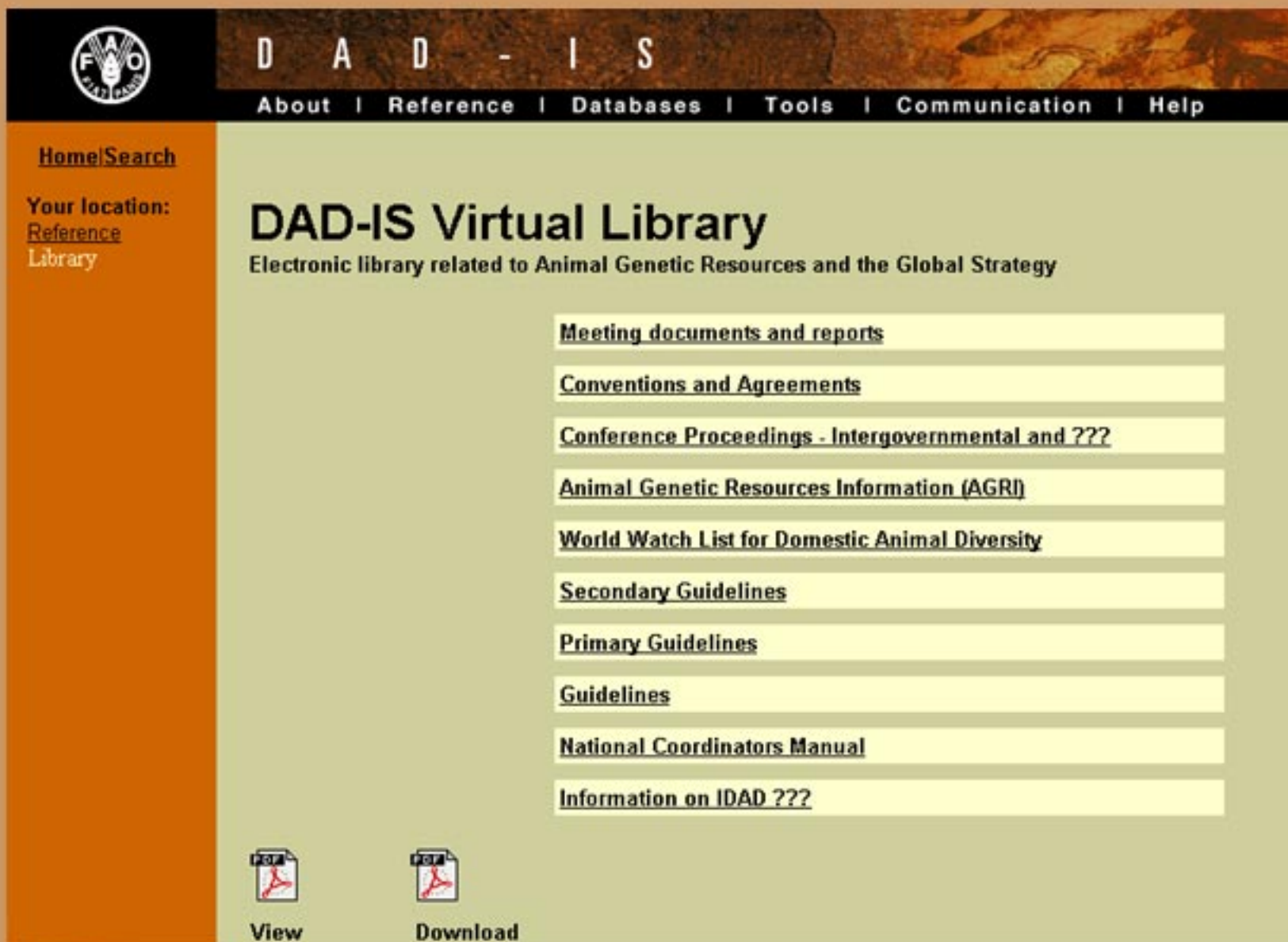
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DAD-IS Virtual Library

The electronic library provides the range of key documents which users can easily download or print



The screenshot shows the DAD-IS Virtual Library website. At the top left is the FAO logo. The header contains the text 'D A D - I S' and a navigation menu with links for 'About', 'Reference', 'Databases', 'Tools', 'Communication', and 'Help'. A left sidebar has a 'Home/Search' link and a breadcrumb trail: 'Your location: Reference Library'. The main content area features the title 'DAD-IS Virtual Library' and the subtitle 'Electronic library related to Animal Genetic Resources and the Global Strategy'. Below this is a list of document categories, each with a PDF icon: 'Meeting documents and reports', 'Conventions and Agreements', 'Conference Proceedings - Intergovernmental and ???', 'Animal Genetic Resources Information (AGRI)', 'World Watch List for Domestic Animal Diversity', 'Secondary Guidelines', 'Primary Guidelines', 'Guidelines', 'National Coordinators Manual', and 'Information on IDAD ???'. At the bottom left of the main area are two icons: a PDF icon labeled 'View' and another PDF icon labeled 'Download'.

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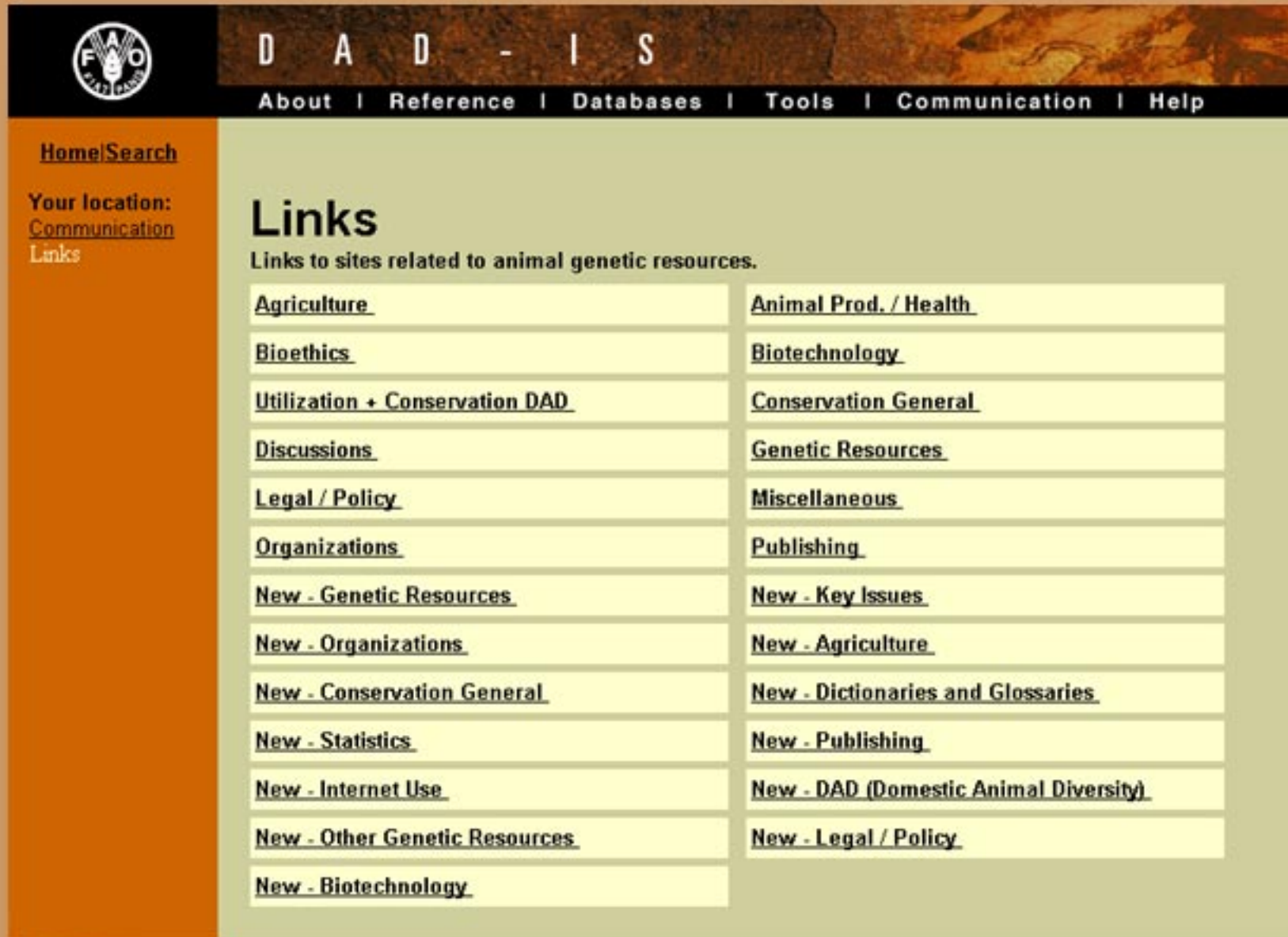
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Links to other unique databases and information sources

DAD-IS Links allow users easy access to Internet sites relevant to Animal Genetic Resources



The screenshot shows the DAD-IS website interface. At the top left is the FAO logo. The main navigation bar includes 'About | Reference | Databases | Tools | Communication | Help'. The page title is 'Links' with the subtitle 'Links to sites related to animal genetic resources.' The content is organized into two columns of underlined links. On the right side of the page, there are seven orange navigation buttons: 'Next page', 'Previous page', 'Section Start', 'Go to this page', and 'Go to site map'.

Home/Search

Your location:
[Communication](#)
[Links](#)

Links

Links to sites related to animal genetic resources.

Agriculture	Animal Prod. / Health
Bioethics	Biotechnology
Utilization + Conservation DAD	Conservation General
Discussions	Genetic Resources
Legal / Policy	Miscellaneous
Organizations	Publishing
New - Genetic Resources	New - Key Issues
New - Organizations	New - Agriculture
New - Conservation General	New - Dictionaries and Glossaries
New - Statistics	New - Publishing
New - Internet Use	New - DAD (Domestic Animal Diversity)
New - Other Genetic Resources	New - Legal / Policy
New - Biotechnology	

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D A D - I S

[About](#) | [Reference](#) | [Databases](#) | [Tools](#) | [Communication](#) | [Help](#)

[Search](#)

DAD-IS IS

- **A COMMUNICATION AND INFORMATION TOOL** FOR USE BY COUNTRIES
- **A CLEARING-HOUSE** FOR INFORMATION AND DATA
- **A SECURE SYSTEM** GIVING COUNTRIES CONTROL OVER COLLATING, RELEASING AND MAINTAINING THEIR DATA
- **AN ELEMENT OF THE STRATEGIC FRAMEWORK** FOR THE MANAGEMENT OF FARM ANIMAL GENETIC RESOURCES

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[Español](#)

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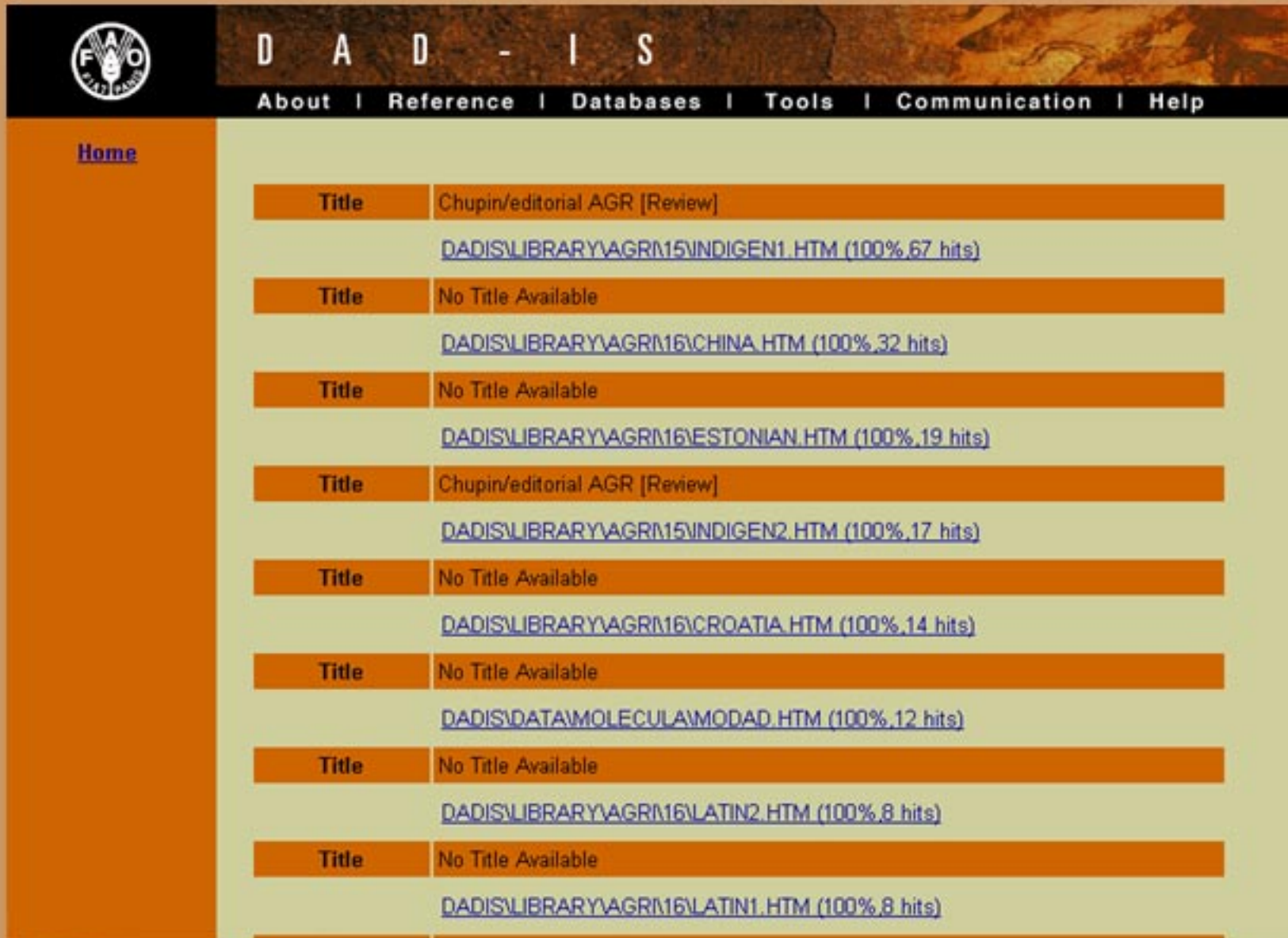
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Locate documents quickly

The full text search makes it easy to locate specific documents on DAD-IS



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Title	Document Link
Chupin/editorial AGR [Review]	DADIS\LIBRARY\AGRM15\INDIGEN1.HTM (100%.67 hits)
No Title Available	DADIS\LIBRARY\AGRM16\CHINA.HTM (100%.32 hits)
No Title Available	DADIS\LIBRARY\AGRM16\ESTONIAN.HTM (100%.19 hits)
Chupin/editorial AGR [Review]	DADIS\LIBRARY\AGRM15\INDIGEN2.HTM (100%.17 hits)
No Title Available	DADIS\LIBRARY\AGRM16\CROATIA.HTM (100%.14 hits)
No Title Available	DADIS\DATA\MOLECULA\MODAD.HTM (100%.12 hits)
No Title Available	DADIS\LIBRARY\AGRM16\LATIN2.HTM (100%.8 hits)
No Title Available	DADIS\LIBRARY\AGRM16\LATIN1.HTM (100%.8 hits)

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DAD-IS ensures security of project information

National Focal Point registration enables password protection of country project information

D A D - I S
About | Reference | Databases | Tools | Communication | Help

[Home/Search](#)

Your location:
[Tools](#)
[Action Planner](#)
[Shared Projects](#)
[Add Password](#)

Add Password

Enter the Project Name and Password to get access.

Project Name:

Password:

to save the password to reset the Form.

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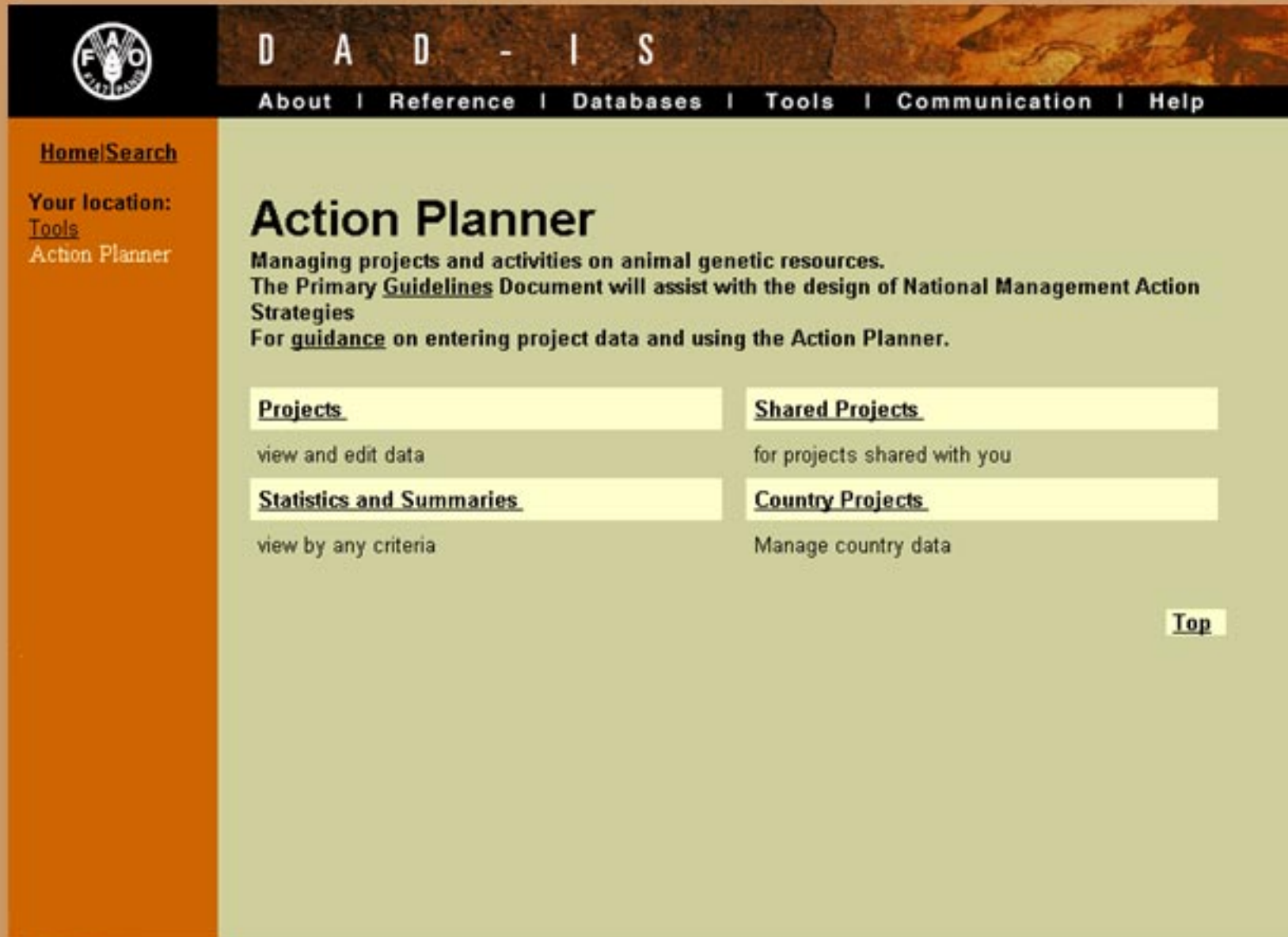
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DAD-IS supports design, implementation, monitoring and reporting of National Action Plans



The screenshot shows the DAD-IS website interface. At the top left is the FAO logo. The header contains the text 'D A D - I S' and a navigation menu with links for 'About', 'Reference', 'Databases', 'Tools', 'Communication', and 'Help'. On the left side, there is an orange sidebar with the text 'Home/Search', 'Your location:', and a list of links including 'Tools' and 'Action Planner'. The main content area is titled 'Action Planner' and includes a description: 'Managing projects and activities on animal genetic resources. The Primary Guidelines Document will assist with the design of National Management Action Strategies. For guidance on entering project data and using the Action Planner.' Below this are four yellow boxes: 'Projects' (view and edit data), 'Shared Projects' (for projects shared with you), 'Statistics and Summaries' (view by any criteria), and 'Country Projects' (Manage country data). A 'Top' link is located at the bottom right of the main content area.

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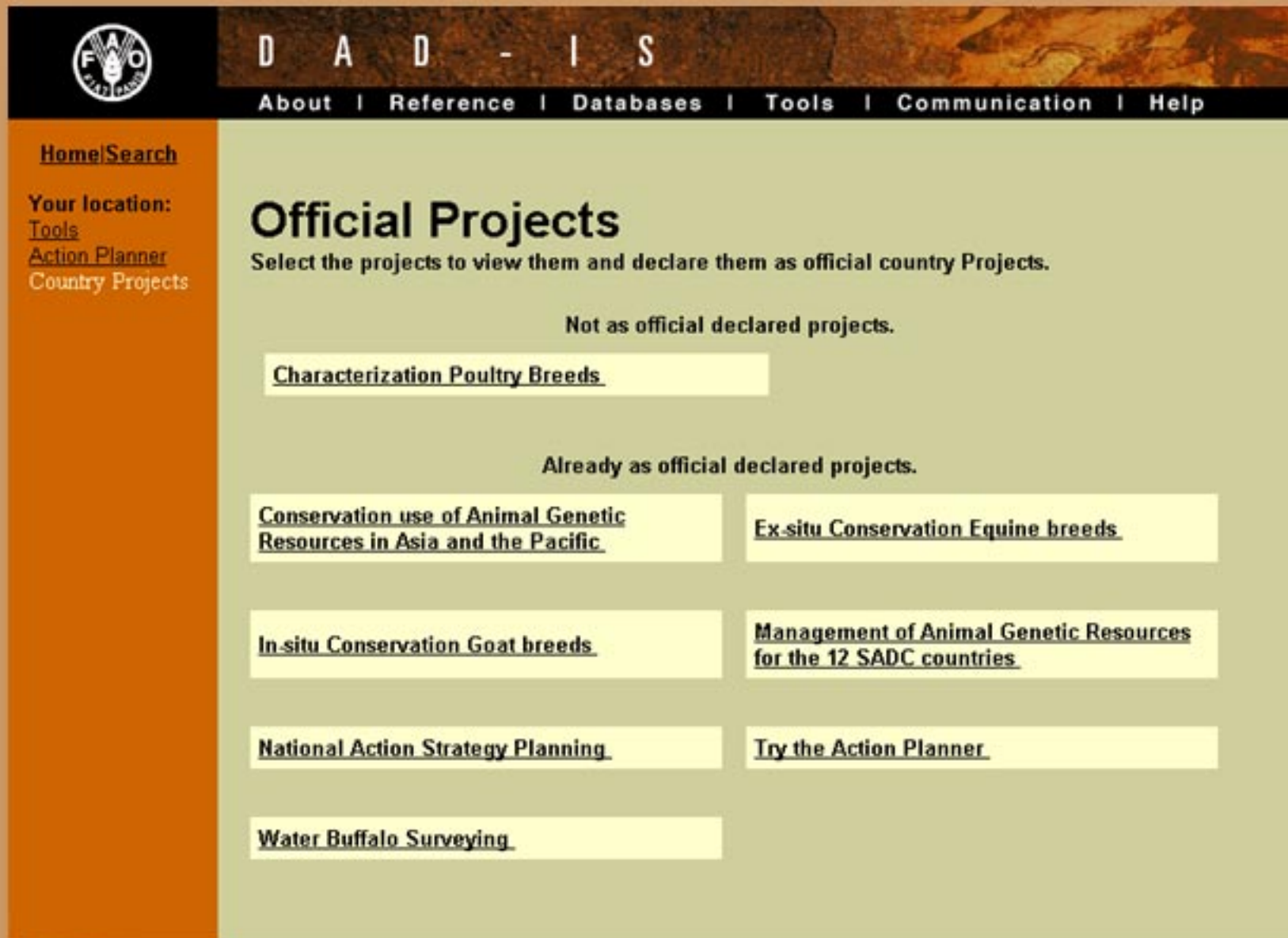
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DAD-IS provides customized project management support

On-line project management contributes to cost-effective national, regional and global management of AnGR



The screenshot shows the DAD-IS website interface. At the top left is the FAO logo. The header contains the text 'D A D - I S' and a navigation menu with links for 'About', 'Reference', 'Databases', 'Tools', 'Communication', and 'Help'. On the left side, there is a vertical orange sidebar with the following links: 'Home/Search', 'Your location:', 'Tools', 'Action Planner', and 'Country Projects'. The main content area is titled 'Official Projects' and includes the instruction: 'Select the projects to view them and declare them as official country Projects.' Below this, there are two sections: 'Not as official declared projects.' and 'Already as official declared projects.' The 'Not as official declared projects.' section contains a single project link: '[Characterization Poultry Breeds](#)'. The 'Already as official declared projects.' section contains seven project links arranged in two columns: '[Conservation use of Animal Genetic Resources in Asia and the Pacific](#)', '[Ex-situ Conservation Equine breeds](#)', '[In-situ Conservation Goat breeds](#)', '[Management of Animal Genetic Resources for the 12 SADC countries](#)', '[National Action Strategy Planning](#)', '[Try the Action Planner](#)', and '[Water Buffalo Surveying](#)'.

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DAD-IS supports cost-effective project management

Timely project information supports conduct of cost-effective national, regional and global management of AnGR



The screenshot displays the DAD-IS website interface. At the top left is the FAO logo. The header contains the text 'D A D - I S' and a navigation menu with links for 'About', 'Reference', 'Databases', 'Tools', 'Communication', and 'Help'. A left sidebar includes links for 'Home/Search', 'Your location:', 'Tools', 'Action Planner', 'Projects', and 'View'. The main content area is titled 'View Project' and displays the following information:

Project number:	Ven-004	Project title:	Characterization Poultry Breeds
Start date:	1/1/96	End date:	10/1/96
Breakdown of time:	month	Summary:	Develop a recording programme to quantify egg production production of local varieties of chickens. To establish the input levels to sustain production. To measure egg production of crosses with exotic breeds and pure exotic breeds, under local conditions.
Public/Confidential:	Public	Project Name:	

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DAD-IS enhances involvement of country stakeholders

On-line project management promotes involvement of key stakeholders and facilitates implementation of action plans

The screenshot displays the DAD-IS web application interface. At the top left is the FAO logo. The header contains the text 'D A D - I S' and a navigation menu with links for 'About', 'Reference', 'Databases', 'Tools', 'Communication', and 'Help'. A left sidebar lists navigation options: 'Home/Search', 'Your location:', 'Tools', 'Action Planner', 'Projects', 'View', and 'Activities'. The main content area is titled 'View Activities' and shows the project name 'Characterization Poultry Breeds'. Below this, there are two buttons: 'Basic Description' and 'Add'. The 'Add' button is highlighted in yellow and includes the text 'enter a new activity'. A 'Top' button is located in the bottom right corner of the main content area.

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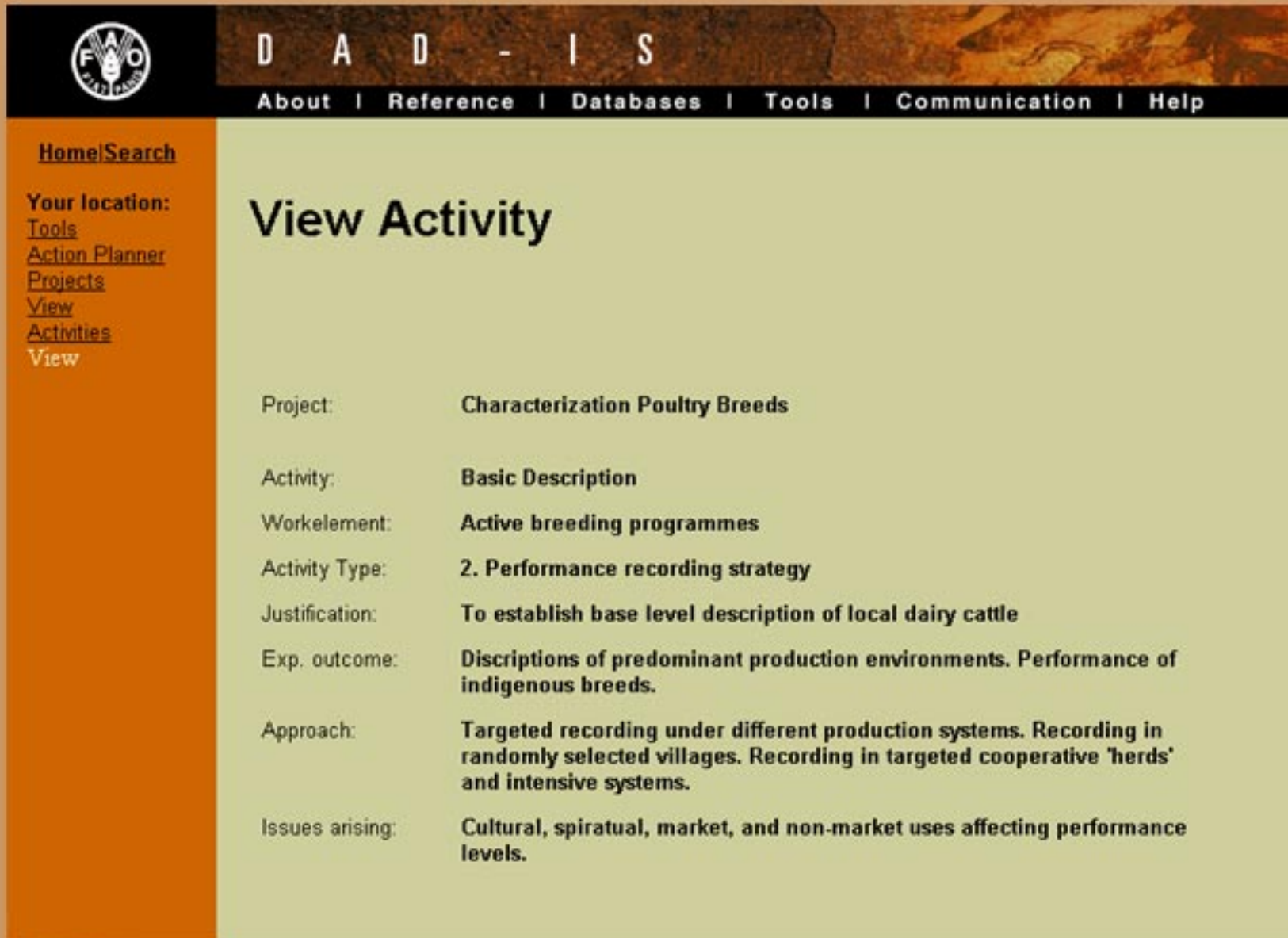
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DAD-IS builds capacity of country networks

The action planner provides a logical framework for activity planning



The screenshot shows the DAD-IS website interface. At the top left is the FAO logo. The header contains the text 'D A D - I S' and a navigation menu with links: 'About | Reference | Databases | Tools | Communication | Help'. On the left side, there is a sidebar with the following links: 'Home/Search', 'Your location:', 'Tools', 'Action Planner', 'Projects', 'View', 'Activities', and 'View'. The main content area is titled 'View Activity' and displays the following information:

Project:	Characterization Poultry Breeds
Activity:	Basic Description
Workelement:	Active breeding programmes
Activity Type:	2. Performance recording strategy
Justification:	To establish base level description of local dairy cattle
Exp. outcome:	Discriptions of predominant production environments. Performance of indigenous breeds.
Approach:	Targeted recording under different production systems. Recording in randomly selected villages. Recording in targeted cooperative 'herds' and intensive systems.
Issues arising:	Cultural, spiratual, market, and non-market uses affecting performance levels.

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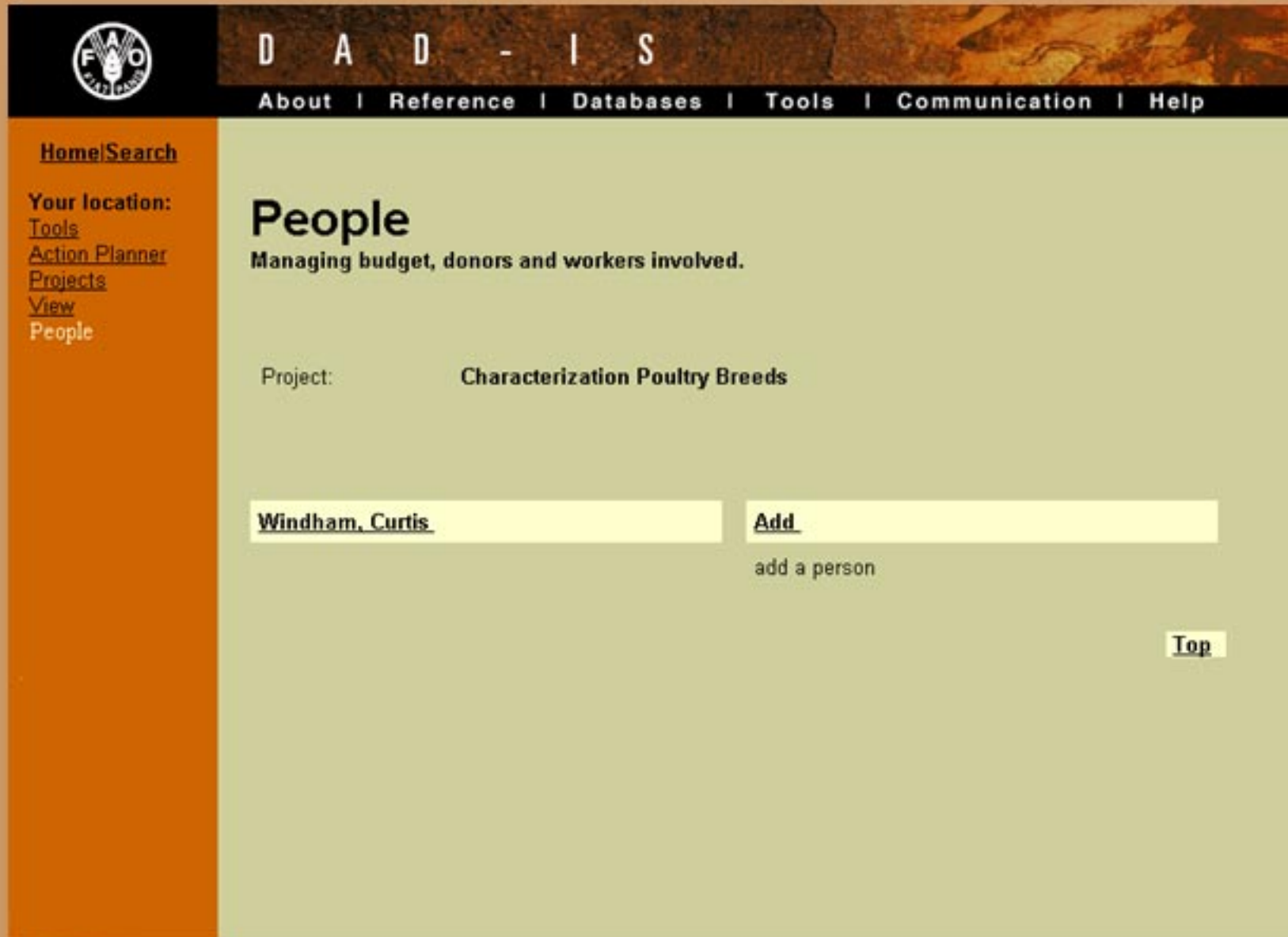
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DAD-IS supports an operations approach to action planning

Primary human and financial resource information is maintained on-line



The screenshot shows the DAD-IS website interface. At the top left is the FAO logo. The header contains the text 'D A D - I S' and a navigation menu with links for 'About', 'Reference', 'Databases', 'Tools', 'Communication', and 'Help'. On the left side, there is a vertical orange sidebar with the following links: 'Home/Search', 'Your location:', 'Tools', 'Action Planner', 'Projects', 'View', and 'People'. The main content area is titled 'People' and includes the subtitle 'Managing budget, donors and workers involved.' Below this, it shows 'Project: Characterization Poultry Breeds'. There is a search bar containing the text 'Windham, Curtis' and an 'Add' button. Below the search bar, it says 'add a person'. At the bottom right of the main content area, there is a 'Top' button.

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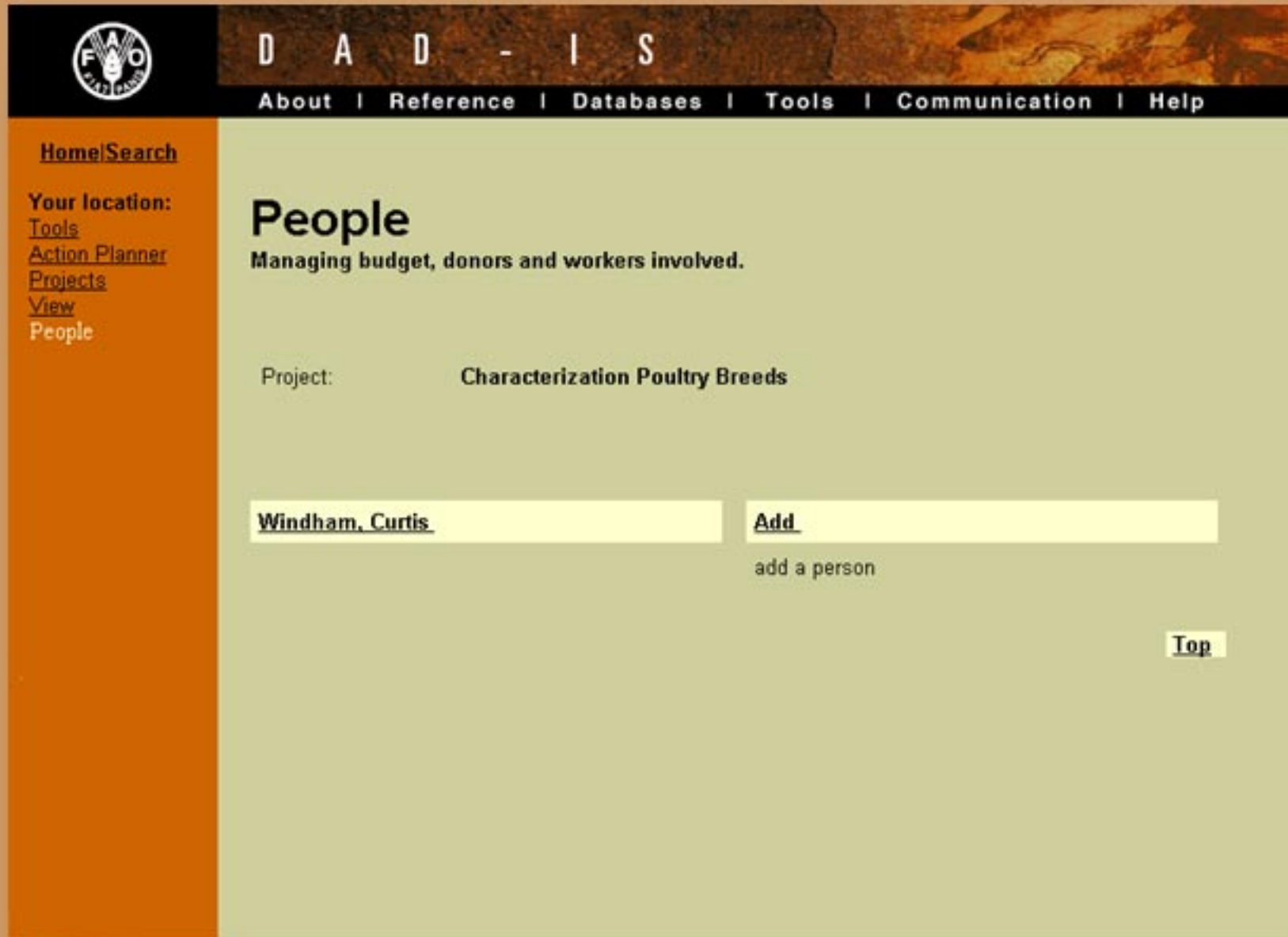
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The Global Strategy - opportunities for involvement

FAO is providing the essential core resources for the Global Strategy for the Management of Farm Animal Genetic Resources. FAO will lead and coordinate its development and will provide global progress reports. It is neither possible nor appropriate, however, for FAO to provide all the human, financial and other resources required to implement this critical country-based global activity. Because each country has sovereignty over, and responsibility for its own genetic resources under The Convention of Biological Diversity, it is appropriate and indeed essential for there to be wide-ranging involvement in the Global Strategy. Most countries possess their own unique genetic resources of those important domestic animal species which are essential to sustaining humankind.

Animal genetic resources management must be fully integrated with:

- animal agriculture - farm animals underpin our ability to increase productivity and product quality while achieving and maintaining sustainable agro-ecosystems.
- national biological diversity conservation strategies - animal genetic resources are being underused, underdeveloped, misused and eroded globally. Animal agriculture and animal genetic resources in particular must be given more attention in planning, development and resource management.

There are many opportunities for involvement in the Global Strategy:

National

Successful global management must be country-led and sound programmes of management must involve all stakeholders. These include:

- farmers and farm service organizations and local communities,
- researchers,
- educators and trainers,
- non-governmental organizations,
- administrators and policy makers in departments of agriculture, natural resources and environment, international and foreign affairs.

In order for countries to participate fully, appropriate national policies and action strategies for management of animal genetic resources need to be adopted and a national focal point identified. This national focal point is important to

coordinate the activities of the various parties concerned nationally, and to provide a strong link to the Global Strategy. The outcome sought is documentation of existing animal genetic resources, their development and improved use and maintenance of those not currently of interest to farmers.

The Global Strategy must be in harmony with the Convention on Biological Diversity and Agenda 21 and built upon strong national programmes, adequately supported by the international community.

International involvement

Although sustainable use and conservation of animal genetic resources is a national responsibility, there is a growing number of intergovernmental, non-governmental and other international agencies becoming actively involved. They have a key role to play in helping to establish national management action plans by supporting such activities as training, technical advice, infrastructure development and the mechanisms for sharing of benefits and dealing with emergencies.

As the global Secretariat for agriculture, FAO is uniquely placed to be a conduit for much needed global coordination. The Global Strategy aims to stir international consciousness of animal genetic resources and endeavour to substantially increase the impact of funding provided and to decrease or avoid non-productive duplication.

Assistance and cooperation

The Strategy provides for a range of bilateral and multilateral assistance and for public and private sector support. Assistance sought is in the form of both grants and loans, as well as in kind support.

Areas for involvement:

- To enable the early completion of the subregional project identification and formulation missions for the Strategy. These are aimed at identifying those projects likely to be most effective in terms of having maximum impact at the regional level, and preparing for their funding and implementation.
- To support the establishment of a country-led regional focal point which will assist the countries of the region to put in place animal genetic resources management programmes.
- To support the initiation of the national focal point in a country and the country-level network.
- To assist a country or countries to design and implement management action strategies for their animal genetic resources.
- To support the conduct of base-line surveys in countries that have incomplete inventories, population data and basic descriptions of their breeds.
- To contribute to the further development of the Domestic Animal Diversity Information System, DAD-IS.
- To support sustainable development and use of locally adapted resources through assisting countries plan and execute performance recording, breed improvement and methods for disseminating improved genetic resources.
- To support the Global Project for the Measurement of Domestic Animal Diversity (MoDAD), which is aimed at reducing the ongoing global management task and increasing its effectiveness.
- To fund all or part of the MoDAD project.
- To support research directed at characterizing, developing and conserving animal genetic resources.



The Global Strategy - opportunities for involvement

- To support a range of training and capacity building initiatives associated with one or more of the Strategy's technical elements.

- To assist with the establishment and maintenance of national genomebanks for the domestic animal species. This could involve cryoconservation, the use of live animals, or both.

- To support the development of global genomebanks of 'last resort' for those genetic resources at high risk, for each of the species of interest.

- To assist with the ongoing monitoring of breeds at risk.

- To provide emergency assistance to prevent the loss of unique animal genetic resources.

Many of these options for involvement will be most cost-effective when properly sequenced within or across species and within and across countries and regions. This is a strong justification for the global coordination role played by the Initiative for Domestic Animal Diversity at the request of FAO Member countries.

EXAMPLES OF PARTIES TO BE INVOLVED FOR A SUCCESSFUL GLOBAL STRATEGY FOR THE MANAGEMENT OF FARM ANIMAL GENETIC RESOURCES

COUNTRY LEVEL

1 Governments - agriculture, natural resources and environment, international cooperation and foreign affairs departments; bilateral assistance agencies.

2 NGOs - including farmers, farm service groups and businesses, other community conservation groups.

3 Education and training institutions.

4 Research institutions.

INTERNATIONAL LEVEL

1 Intergovernmental

GLOBAL

Food and Agriculture Organization of the United Nations (FAO) and, *for example*, United Nations Environment Programme (UNEP) United Nations Development Programme (UNDP) United Nations Educational, Scientific and Cultural Organization (UNESCO)

The Conference of Parties to the Convention on Biological Diversity

REGIONAL

for example,

Inter-American Institute for Cooperation on Agriculture (IICA)

European Union (EU)

Nordic Council

Southern African Development Community (SADC)

2 International Agencies

PUBLIC SECTOR

for example,

World Bank

Global Environment Facility (GEF)

Regional Development Banks

International Office of Epizootics (OIE)

Consultive Group on International Agricultural Research (CGIAR)

NON-GOVERNMENTAL ORGANIZATIONS

for example,

World Conservation Monitoring Centre (WCMC)

World Resources Institute (WRI)

Rare Breeds International (RBI)

European Association of Animal Production (EAAP)

World Conservation Union (IUCN)



Further information on the Strategy is available from:

Initiative for Domestic Animal Diversity
Animal Production and Health Division
FAO

Viale delle Terme di Caracalla
00100 Rome, Italy

Telephone: (39) 06 5705 3364

Fax: (39) 06 5705 3927

E-mail: idad@fao.org

WWW: <http://www.fao.org/dad-is>



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Taking up the management challenge for animal genetic resources

The future of each nation, and of humanity as a whole, depends on how the present generation takes up the challenge of developing policies and action for sustainable food production. Animal genetic resources make a large contribution to world food and agriculture production but this resource is now threatened. Important diversity is being lost, thereby reducing the options for achieving sustainable agriculture and universal food security. Diversity is ultimately lost or saved at the country level and, therefore, this is where effective management action must be focused.

The Convention on Biological Diversity introduces a new set of rules which enable countries to take responsibility for the better management of their animal genetic resources. Under the Convention, each nation has sovereignty over its genetic resources. With this right comes accountability for the development of national action strategies, plans and programmes for the conservation and sustainable use of biological diversity. The Convention likewise charges nations to identify and monitor their biodiversity, to maintain, organize and share resulting data and to integrate the conservation and sustainable use of biological resources into national decision-making.

The Convention also promotes sharing of benefits. As countries become more interdependent in accessing unique diversity, ultimately its better management and use becomes a global responsibility. The Global Strategy for the Management of Farm Animal Genetic Resources provides a mechanism for national and international planning, communication, cooperation, technical action and policy development in managing animal genetic resources.

Taking up the management challenge involves:

Developing a management capability

Country based

A focal point for management action needs to be established in each country to provide the necessary leadership, communication and reporting. An essential element will be to establish a broad-based network of technical and practical skills involving all those who have a contribution to make at the national level. The focal point should consist of a coordinator and an advisory committee.

Strong international links will assist countries. The focal point will act as the contact for the FAO Global Strategy.

Nations that choose to participate actively in regional and global efforts to conserve and make sustainable use of animal genetic resources can look forward to new benefits from these arrangements and activities.

Assessment of needs

Inventory and characterization

Each breed requires a description of its physical characteristics, production traits, information on its distribution, and the characteristics of the production environment in which it is being used, main uses, population numbers, development activity, *ex situ* conservation and breed-specific indigenous knowledge. (see sheet: Characterization) The need for such information for breeds at risk is

urgent. And, because of their potential contribution, wild relatives of domestic species found within the country should also be identified.

Human and technical capacity

Resources should be identified for research, education, technology transfer, planning and policy development. Also necessary is the identification of facilities for animal genetic resources management, for example the availability and use of reproductive biology techniques. Of particular importance are various technologies for communication and data processing.

Livestock sector

For each species, all uses, main production environments and key factors influencing germplasm and accessibility should be identified. This includes identifying government policies which affect animal genetic resources management and use.

The role of animal genetic resources

Potential contributions of indigenous and imported breeds to the nation's current and future needs for food and agriculture must be evaluated.

Developing a strategy for action

Goals and operational objectives must be determined, based on the assessment of needs. The objectives must be clearly defined and measurable so that progress can be assessed. Plans should be integrated with related national sustainable development and conservation initiatives. To ensure cooperation and maximum relevance of the strategy, a consensus among stakeholders should be obtained and their role in carrying out the plan established. Development of cost-effective programmes of management involves a convergence of a wide range of skills and knowledge which is greater than any single institution is likely to possess. Therefore cooperation is crucial to the success of conservation and better management of animal genetic resources. FAO will make available technical guidelines to assist this activity.



Taking up the management challenge for animal genetic resources

The main activities may include:

- **Completing and expanding the inventory and characterization of breeds.**
- **Devising a comprehensive action plan for each important species.** This is the nation's response to its assessment of the role of animal genetic resources and provides priorities and policy direction for resource use, development and conservation. Plans should include realistic time schedules and comprehensive costing.
- **Training and capacity building** It is important to identify areas of highest priority for training, technical development and capacity building in order to support and to develop plans for meeting those needs. This involves identification of technology transfer, basic and advanced training needs, the identification of appropriate institutions to serve as training centres, and curricular development.

Implementation

Launch the necessary activities and policies provided for in the plan, to meet the stated goals and objectives of the strategy. Implementation should be carried out in a practical way to encourage maximum involvement and commitment from stakeholders. Implementation according to a logical plan of action will foster ongoing movement forward - seeking to attain results from prescribed plans and actions.

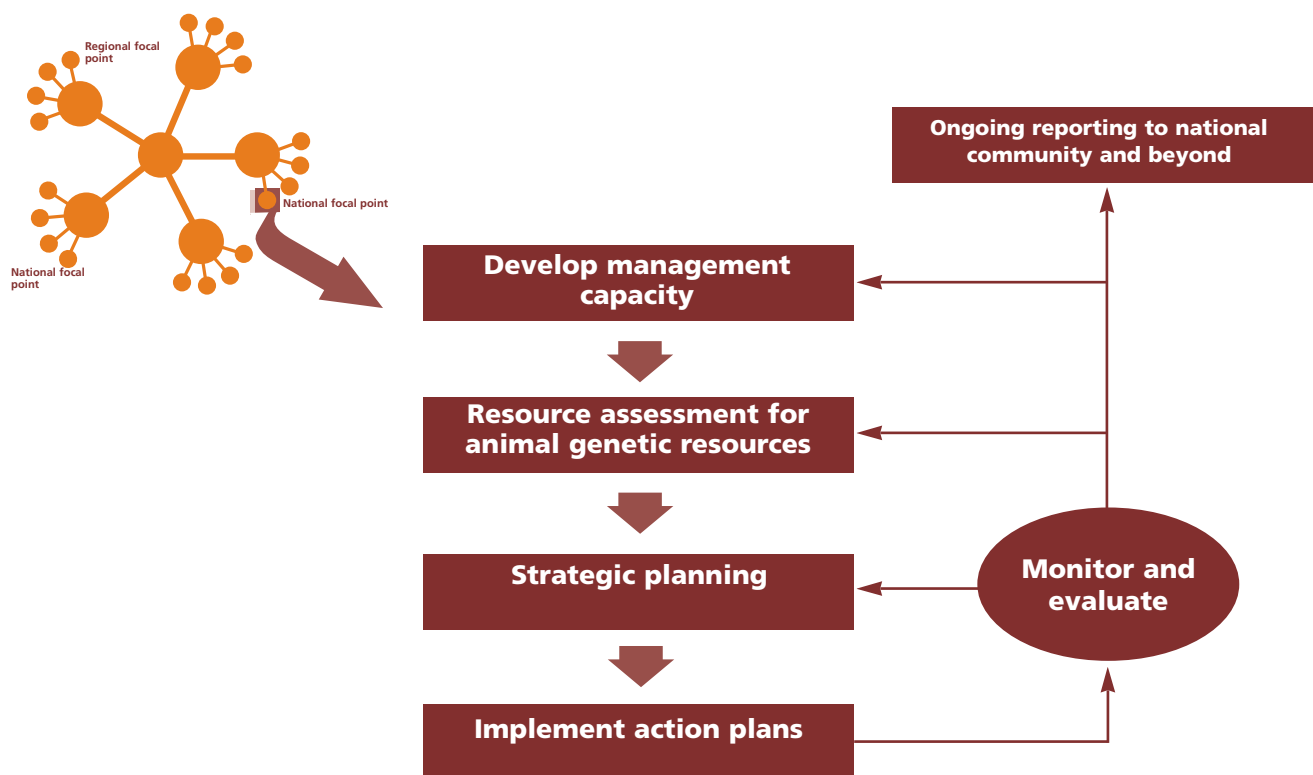
Monitoring, evaluation and reporting

A system of monitoring is crucial to achieve effective implementation and evaluate progress towards objectives and, as appropriate, determine new priorities, issues and opportunities. Progress and status reports are essential

to share data and information within and among nations. National reports provide feedback to those involved in management of animal genetic resources and other key stakeholders. Effective management must be dynamic and able to respond to the results of evaluation. Reports also provide the basis for gaining additional financial and human resources.

Detailed guidelines for developing National Action Strategies for the management of animal genetic resources are available from iDAD via the Internet and in CDRom form for those lacking Internet access.

Developing a National Animal Genetic Resources Management Strategy



Further information on the Strategy is available from:



Initiative for Domestic Animal Diversity
Animal Production and Health Division
FAO
Viale delle Terme di Caracalla
00100 Rome, Italy

Telephone: (39) 06 5705 3364
Fax: (39) 06 5705 3927
E-mail: idad@fao.org
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- **Completing and expanding the inventory and characterization of breeds.**
- **Devising a comprehensive action plan for each important species.** This is the nation's response to its assessment of the role of animal genetic resources and provides priorities and policy direction for resource use, development and conservation. Plans should include realistic time schedules and comprehensive costing.
- **Training and capacity building** It is important to identify areas of highest priority for training, technical development and capacity building in order to support and to develop plans for meeting those needs. This involves identification of technology transfer, basic and advanced training needs, the identification of appropriate institutions to serve as training centres, and curricular development.

Implementation

Launch the necessary activities and policies provided for in the plan, to meet the stated goals and objectives of the strategy. Implementation should be carried out in a practical way to encourage maximum involvement and commitment from stakeholders. Implementation according to a logical plan of action will foster ongoing movement forward - seeking to attain results from prescribed plans and actions.

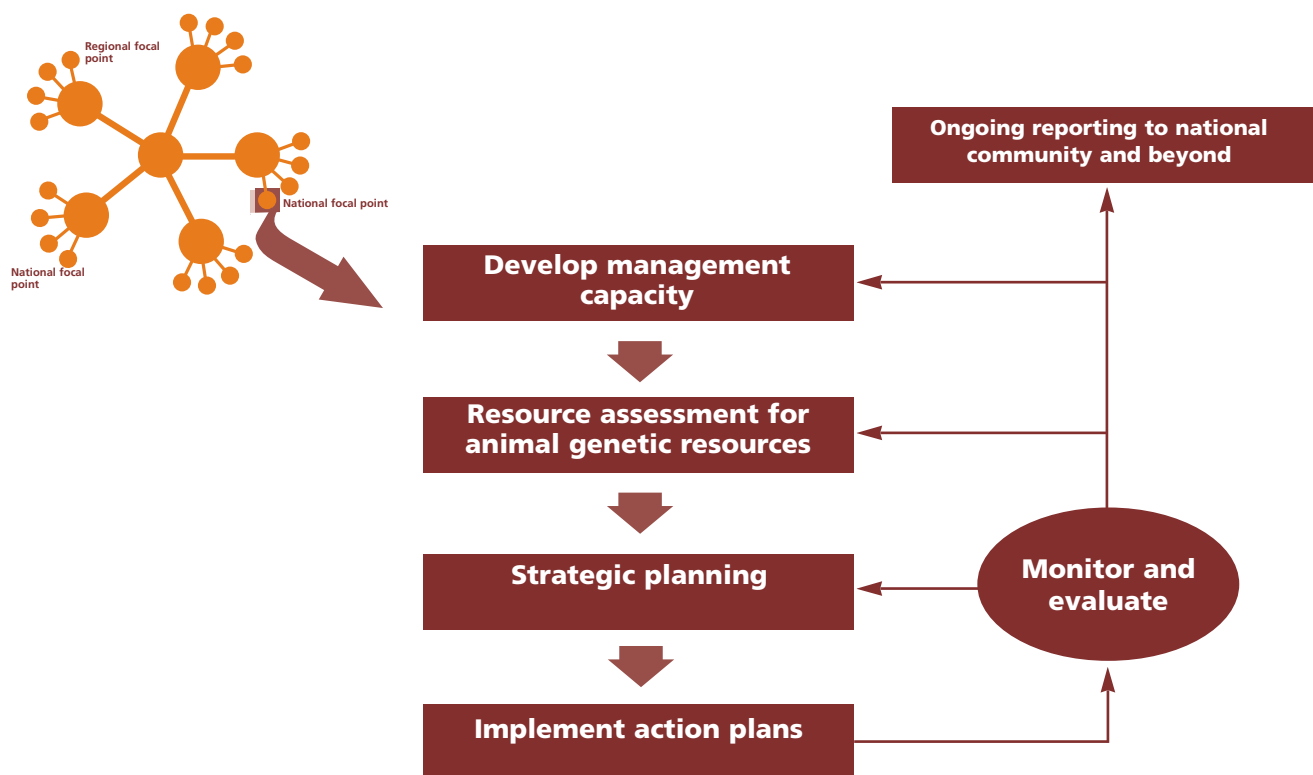
Monitoring, evaluation and reporting

A system of monitoring is crucial to achieve effective implementation and evaluate progress towards objectives and, as appropriate, determine new priorities, issues and opportunities. Progress and status reports are essential

to share data and information within and among nations. National reports provide feedback to those involved in management of animal genetic resources and other key stakeholders. Effective management must be dynamic and able to respond to the results of evaluation. Reports also provide the basis for gaining additional financial and human resources.

Detailed guidelines for developing National Action Strategies for the management of animal genetic resources are available from iDAD via the Internet and in CDRom form for those lacking Internet access.

Developing a National Animal Genetic Resources Management Strategy



Further information on the Strategy is available from:



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