REGIONAL MEETING OF CAC RAIS

15-16 January, 2007
Tashkent, Uzbekistan

PROCEEDINGS
Joint strategy for increasing effectiveness of agricultural communication and information systems in Central Asia and the Caucasus as well as partnership in agricultural planning and research are important premises for the development of agriculture in the region. In this regard, it is especially noteworthy that a wide range of stakeholders, united in their common goal of raising living standards through agricultural development, are actively participating in this Regional Meeting, which is serving as an excellent platform for exchange of information, analysis of the current status of agricultural information systems in the region and development of joint strategies for strengthening partnership in this important area.

Necessity for effective coordination of our activities in planning, resources allocation and implementation of agricultural research for development (ARD) programs in the region is evident. This meeting has a great value in identifying practical measures for strengthening partnership among various stakeholders, including National Agricultural Research Systems (NARS), International Agricultural Research and Development Organizations, as well as in coordination of our joint strategies for implementing the mutually agreed action plans.

From this viewpoint, the role of the regional forum CACAARI, as the interface between the NARS and International Agricultural Research Centers (IARCs), is fundamental. This regional forum has become a crucial tool of cooperation among regional research institutions, bringing them together again after a period of relative isolation following the collapse of the former Soviet Union. Important elements of this cooperation reside in setting joint research priorities and developing common information systems in agriculture, disseminating innovative technologies and success stories, as well as capacity building, especially through English language courses for young researchers. It is also clear that effectiveness of these efforts depends on active financial support from international community, as the capacities of national budgets for agricultural research are quite limited.

Using this opportunity, I would like to thank the Global Forum for Agricultural Research (GFAR) and International Center for Agricultural Research in the Dry Areas (ICARDA) for their support in organizing this important Meeting on Regional Agricultural Information System and express my hope for our continued collaboration.

Dr. Abdushukur Khanazarov,
Executive Secretary,
CACAARI
### Acronyms and Abbreviations

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<tr>
<th>Acronym</th>
<th>Description</th>
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<tr>
<td>CACAARI</td>
<td>Central Asia and the Caucasus Association of Agricultural Research Institutions</td>
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<td>AARINENA</td>
<td>Association of Agricultural Research Institutions in the Near East and North Africa</td>
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<td>APAARI</td>
<td>Asia-Pacific Association of Agricultural Research Institutions</td>
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<td>APARIS</td>
<td>Asia-Pacific Agricultural Research Information System</td>
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<td>ARD</td>
<td>Agricultural Research for Development</td>
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<td>CAC</td>
<td>Central Asia and the Caucasus</td>
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<td>CGIAR</td>
<td>Consultative Group on International Agricultural Research</td>
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<td>FAO</td>
<td>Food and Agriculture Organization</td>
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<td>GFAR</td>
<td>Global Forum for Agricultural Research</td>
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<td>ICARDA</td>
<td>International Center for Agricultural Research in the Dry Areas</td>
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<td>ICM</td>
<td>Information and Communication Management</td>
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<td>ICT</td>
<td>Information Communication Technologies</td>
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<td>NAIS</td>
<td>National Agricultural Information System</td>
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<td>NARS</td>
<td>National Agricultural Research System</td>
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<td>NINP</td>
<td>National Information Nodal Point</td>
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<td>PFU</td>
<td>Program Facilitation Unit</td>
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<td>RAIS</td>
<td>Regional Agricultural Information System</td>
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In his opening statement, Dr. Raj Paroda, Regional Coordinator, ICARDA-CAC and Head, CGIAR-PFU, welcomed all participants of the Meeting on behalf of the CGIAR Consortium for CAC and ICARDA. The presence of various NARS leaders and ICT experts in this meeting, as well as of ARIS Coordinators from other Regional Fora such as APAARI and AARINENA is extremely useful for the success of this meeting. The role of GFAR in organizing this meeting in partnership with CACAARI, and with facilitation of CGIAR Consortium for CAC and ICARDA Regional office in Tashkent, is especially appreciated. For CAC countries as economies in transition, there is an urgent need to have necessary organization and management reforms and to have them globally linked through effective ICT networking and partnership. In this regard, sharing knowledge for agricultural R&D in CAC region is very important, especially in view of the existing limitation due to language barrier and lack of linkages in the past with the international scientific community. Fortunately, ICT offers immense opportunities to share information and join hands through networking so that different NARS in the region could gain through sharing of successful stories and experiences of each other and from other regional and global fora.

In strengthening regional agricultural information system, the Central Asia and Caucasus Agricultural Research Information System (CACARIS) can obviously play a critical role. Since information would require necessary communication skills and softwares, which differ among stakeholder groups, there is a need to have a unified approach as well as proper understanding. This requires the establishment and maintaining of effective research-farmer-exporter linkage as well as enhancing farmer’s ability to access advanced agricultural technologies and information relating to weather, prices, marketing opportunities, etc. Although traditional channels of communication still remain important, ICT is a viable and efficient means for disseminating knowledge at much faster pace and also at lower cost. In order to do so, we need to understand current status of ICT use by NARS, have a system of information flow and networking through designated National Information Nodal Points (NINP) and a mechanism for continued cooperation in future.

These initiatives of CAC Regional Forum are both timely and fully justified. We should express our appreciation to the movers of CAC Regional Forum and the builders of all the success stories in agricultural research and development, and provide much needed facilitation role. This is presently what PFU in partnership with CACAARI is doing. Since the time of establishment of the Regional Forum for Agricultural Research in Central Asia and the Caucasus, both PFU and ICARDA have been actively involved in strengthening this important organization. Our Regional office in Tashkent has provided the secretarial support.

Inter-regional cooperation with APARIS, AARINENA-RAIS, FAO-Agroweb and other Regional Information Systems is important. It is hoped that the representatives of CACARIS, APARIS, AARINENA-RAIS, FAO-Agroweb will establish good linkages and cooperation in future. It is necessary to strengthen CACARIS network through Agro-Portails, RAEL, Gateways, etc. In order to achieve all this, it is necessary to empower and train NINPs, and have a RAIS Steering Committee formed. The CACARIS Steering Committee (SC) would be responsible for the development of regional ICM strategy. Our priority needs should be identified and Workplan for 2007-2008 should be developed for implementation, through much needed funding support of GFAR and PFU as well as ICARDA, and through active involved of NARS.
Dr. Abdushukur Khanazarov, Executive Secretary of CACAARI and Deputy Minister of Agriculture and Water Resources of Uzbekistan, welcomed participants on behalf of the Uzbek Government. In his speech, Mr. A. Khanazarov indicated that ICT and ICM are key factors for Agriculture Research for Development (ARD). To strengthen the regional agricultural information system, the following are important:

1. Strengthen the material and human capacities of the participating NARS institutions through building new partnerships for development of regional and national agricultural research systems.
2. Establish national agricultural fora in order to involve all national stakeholders in planning, research and development of natural resources.
3. Involve IARCs in project development and assessment of their impact.
4. Disseminate success stories and contact information among all concerned.

Our joint efforts in developing the CAC-RAIS through the regional forum CACAARI, with the support of International Centers, will contribute for the sustainable development of agriculture in our region.

Dr. Ajit Maru, GFAR, welcomed all participants and assured them of the continued support of GFAR in the development of regional collaboration in ICM

Dr. Zakir Khalikulov introduced the participants, familiarized them with the agenda of the meeting.

Session I: Experiences of GFAR and Regional Fora

Chairperson: Dr. Abdushukur Khanazarov
Co-chairperson: Dr. Guram Alekiside
Rapporteur: Mrs. Taraneh Ibrahimi

Dr. Ajit Maru, in his presentation on “Developing National and Regional Agricultural Information Systems: Lessons Learned” informed the participants that the National Agricultural Information System comprises of a set of agriculture related information sources in a country that are publicly accessible and satisfy the needs of its users which include farmers, producers, scientists, teachers, students, research managers, policy makers, processors, market intermediaries, farm input providers, consumers of agricultural products, etc. Each user requires different sources of information and NAIS should be able to identify them. Therefore, a NAIS is made up of a set of information systems providing different information from a variety of sources and catering to a multitude of users. Prior to the use of ICT, there wasn’t even a concept of a NAIS, but only national agricultural bibliographic systems for scientific and technical information.

Generic framework to enable ICT use for ARD includes five components. The first one, "ARD information organization", produces web sites, CDs, publications, radio programs, etc., which form together the "Information platform". The information thus produced is disseminated to users through the "Information Bus" component. New knowledge and information are released to users through the "Information and Knowledge Intermediaries."
Key issues to be addressed in developing AIS are related to 7C’s, namely, Connectivity, Content, Communication, Capacity and Competence, Community Participation, Capital Investment, Collaboration, and Culture of Organizations.

Finally, for effectiveness of RAIS, regional fora must have an explicit communication strategy. In addition to a focal unit, regional fora must also identify a National Lead Institute that will guide and support national collaboration in developing and strengthening agricultural information systems. The Lead Institute may be responsible to provide access to standards, norms, guidelines, tools, applications, translation etc. at the national level.

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**Dr. Sahdev Singh** made a presentation on the activities of Asia-Pacific Agricultural Research Information System (APARIS). Information needs and problems which exist in information dissemination in Agricultural Research for Development can be addressed by ARD Institutions through providing knowledge production and dissemination and building capacity. The role of Regional Fora and Regional Agricultural Information Systems in knowledge sharing between NARS and others, strengthening collaboration among ARD institutions and Capacity Building is instrumental. In this regard, learning from the experience of APARIS could be quite useful for building the Regional Agricultural Information System in CAC. APARIS Governance is comprised of APARIS Steering Committee, National Information Nodal Points (NINPs), APAARI Secretariat and APARIS Coordinator. NINPs are the main drivers of APARIS. They help APARIS in identifying the information needs of NARS through linking APARIS with NARS. The NINPs also provide success stories and country reports. APARIS themes are the following: Capacity building, Advocacy for ICT/ICM in ARD, Integration of Information Resources and Inter-regional Cooperation through GFAR. The NARS institutions produce information, while the APARIS plays an important role in sharing and exchanging this information. APARIS is also actively engaged in capacity building and advocacy. Other important APARIS functions consist of integrating information resources, including continuous update of APAARI web site, Regional Agricultural Expert Locator and ARD Information Gateway.

APARIS has a close collaboration with other Regional Fora, as well as stronger NARS such as JIRCAS, ACIAR and RDA, sub-regional groups (SEARCA, SAIC, SPC), the private sector and several foundations and NGOs.

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**Dr. Taraneh Ibrahimi** informed the participants about the activities of the AARINENA-RAIS (Association of Agricultural Research Institutes of Near East and North Africa – Regional Agricultural Information Systems). AARINENA-RAIS Secretariat is located in Iran. The Steering Committee of AARINENA-RAIS is composed of information technology and information management specialists from the five sub-regions and representatives of AOAD, FAO, GFAR and ICARDA. The first step in the development of AARINENA-RAIS was the design of a National Agriculture Information System. AARINENA-RAIS has developed its Business plan for 2007-2009. The main issues in this plan are related to the identifying focal points in the member countries, capacity building programs and supporting the previous projects which have been implemented by the first Steering Committee. Like APAARI, AARINENA has its own website. All activities related to the AARINENA web site (http://www.aarinena.org), are managed and developed by the AARINENA-RAIS secretariat. There have been 3 versions of the web site since 2002, including in Arabic language developed in collaboration of Regional FAO office in Cairo, Egypt. The main activities of AARINENA-RAIS from 2004 to 2006 were developing the Western Asia Agricultural Researchers Information System and producing the Medicinal and Aromatic Plants Webpage on the AARINENA Web site. AARINENA has 4 Regional Networks (Cotton, Date-palm, Olive, Medicinal plants). All of them collaborate closely with AARINENA-RAIS. Those of them which don't have their own website can publish their
information on the AARINENA website. The Western Asia Agricultural Researchers Information System has been developed jointly by Iran, Turkey, and Pakistan and includes more than 400 publications from regional agricultural researchers. Another important project in the region NARIMS (National Agricultural Research Information Management System) has been implemented by the Central Laboratory for Agricultural Expert Systems (CLAES) in Egypt with the support of FAO. NARIMS enables researchers and scientists to carry out research more effectively by creating access to research and institutional information, as well as by providing modern tools for managing research information, projects, plans, and other activities. Finally, one of the main future issues for AARINENA-RAIS is to identify focal points in the member countries.

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Dr. Zakir Khalikulov made a presentation on the main highlights of the first CAC-RAIS meeting. The Regional Agricultural Information System (RAIS) Workshop for Central Asia and the Caucasus was held in Tashkent, Uzbekistan from 27-28 January 2004, which also was the first formal event organized by the established CAC Association of Agricultural Research Institutions (CACAARI). During that meeting, regional needs for agricultural information system were identified. These needs consisted of the support for agricultural information and communication management (ICM) through an active political commitment and effective implementation of an ICT policy at the national level, exchange and sharing of information at national, regional and inter-regional level, identifying focal points in the region as the information resources to exchange data and knowledge. Based on these needs, a Regional Agricultural Information System in the CAC Region was established. However, for effective national and regional information system in the area of ARD, a multi-stakeholder involvement was necessary. In this regard, the Agroweb was considered as a relevant initiative, enabling the management of national information resources in agricultural research for development, and acting as a gateway function from the regional level, as well as facilitating the access to national resources. Some of the main recommendations of the first CAC-RAIS meeting were to prepare a document on the CAC-RAIS strategy to be facilitated by the GFAR Secretariat, to define a specific plan of work to strengthen the ICT activities and skills at a regional level and to launch a RAIS Steering Committee.

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Mr. Umidjon Rahmonberdiev made a presentation on strengthening the existing CACAARI web site. The current web site (http://cacaari-forum.narod.ru) has minimum information and it is not updated; the support and maintaining is very low and the design is very poor. During the last months, some improvement in this regard was made. A new web address was registered as http://www.cacaari.org, for which the CACAARI and ICARDA holds ownership rights. The new design of the website supports all the necessary standards for a dynamic website, in addition to being well secured. Currently, the website contains such information as the CACAARI constitution, events, news. In future, information related to the research institutes, projects, experts, links to other Regional Networks should be included. Developing the databases is essential to store the huge amount of data in a centralized manner and to facilitate information exchange in the region and with other RAIS. A dynamic website has several advantages. Online services such as e-libraries, encyclopedias, e-manuals and discussion boards could be offered to the users through the website. It also allows the users to comment news, submit their electronic publications to the E-library, participate in online discussions and forum, and write feedbacks and testimonials. The daily support and maintenance of the web site would also involve troubleshooting and maintaining online web services, keeping up-to-date information about projects, contacts, experts and developing new web services in order to satisfy future needs and goals.

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In the general discussion of the above presentations, the participants asked several questions such as: “How the linkage between AARINENA and APARIS was established?” “How the process of gathering, analyzing and publishing the information on AARINENA web site is organized?” and the presenters responded to these questions. All participants agreed that exchanging and sharing information are the main issues which should be taken in consideration. The participants also discussed the publications and how they can share them with other countries, collecting information and deciding about the right data to publish on the web, as well as the standardization of the databases. The participants asked APAARI, AARINENA and international organizations to introduce some successful products which can be used as a model. Dr. Maru said that though it is important to standardize the databases, however, it is better if each country has its own policy to recognize which kind of database is really needed for their country.

Session II: Country Status Reports

Chairperson: Dr. Zakir Khalikulov
Co-chairperson: Dr. Taraneh Ibrahimi
Rapporteur: Dr. G. Karimova

Armenia

Dr. Ashot Hovhannisyan presented the country report for Armenia on the current status of agriculture in Armenia and the activities on ICT and ICM for ARD. He mentioned that in Armenia there is an organization named “Republican Center for Assisting Agriculture” which analyzes and organizes data of all research works, done by agricultural research organizations in the country, as well as compiles a database of scientific and technical researches. Beside, in all the provinces of Armenia there are regional “Centers to facilitate agriculture” linked to the Republican Centre. In this manner, obtaining necessary information in a short term, as well as information exchange, is facilitated. Collection and exchange of agricultural market – related information is done in a similar way. Thus, it can be noted that only in 2006 the ten regional centers provided 9300 marketing services to the country’s farming enterprises. The above mentioned regional organizations also facilitated exchange of necessary information and messages.

Up-to-date information relating to agricultural market as well as the prices of agricultural products, are also published in a weekly newspaper «Agronews», some 5000 copies of which are issued with financial support of the Ministry of Agriculture of Armenia. Articles on the results of scientific research and latest agrarian technologies are printed in a monthly magazine «Agrarian science», issued in a 1500-strong circulation. All data from scientific centers and the State Agrarian University of Armenia is provided to the Republican Centre to facilitate agriculture, where it is processed, generalized and stored in the information and technology data bank. The RCFA also collects information from the regional centers to facilitate agriculture, as well as information on agricultural produce from all provinces of the country. All this information is processed, generalized and then published on a web-page.

Any one (including farmers) who can access Internet, can use it for communication. Moreover, it is necessary to provide farmers with training to teach them to use the existing information and develop the necessary contacts.
Azerbaijan

Dr. Yagub Guliev presented the country report on the current status of National Agricultural Information System and a brief description of agriculture in Azerbaijan. The further development of rural enterprises in Azerbaijan is limited by market imperfections resulting in ineffective marketing linkages due to a number of problems such as: (i) insufficient range of financial services; (ii) disorganized supply chains with poor vertical coordination; (iii) poor business environment characterized by weak investment climate, inadequate contract law, corruption, and others; (iv) high transaction costs for marketing and trade resulting from a limited number of producer organizations and professional associations; (v) poor public services and institutional capacity; and (vi) inadequate public investment in electricity and gas supply, transportation and communication infrastructure, and public marketing infrastructure such as wholesale markets.

On February 7, 2002 the Government of the Republic of Azerbaijan began to execute “National Information Communication Technology Strategy (NICTS) for development and its initial implementation” project joint with UNDP. In the framework of this project National Strategy was prepared which declared strategic purpose of the Government: to build Information Society in the Republic of Azerbaijan within 10 years.

Below are specific strategies outlined by this policy document to achieve ICT objectives of a number of sectors:

Education: modernizing education through training of national staff and providing minimum ICT literacy in the country.

Social: providing free ICT services for the economically poor, helping invalid and disabled people with their social-cultural needs, reducing poverty and unemployment, protecting the environment, and solving gender problems

Development and Telecommunication Infrastructure: modernizing telecommunication infrastructure and developing new data networks, creating an environment for fair competition, conducting flexible tariff policy in telecommunication services.

Electronic Government: Using ICT in the state administration centrally and locally, creating conditions for non-governmental organizations (NGOs) and citizens to participate in public administration, initiating electronic documentation exchange, and applying ICT in election processes.

Legislation: creating, developing and updating ICT legislation, ensuring transparency in licensing, developing standards and creating legislative database.

Electronic economy: creating conditions for electronic commerce including electronic payments, stimulating wide application of ICT in state and private sectors and creating favorable environment for information service.

Scientific technical and Industrial: forming and developing ICT industry, stimulating ICT services and products for internal use and export, establishing training /consulting techno parks, and encouraging development of small- and medium-sized ICT companies.

Information security: ensuring national security against electronic crimes, ensuring rights of citizens and organizations to obtain and use electronic information, and providing citizen information security

Annual growth rate in the ICT sphere has exceeded general growth rate by 2 or 3 times in Azerbaijan during recent years. Gross Domestic Product growth hit 30% in 2005 and 2006, which changed the ratio. The growth in communication sphere was 30% in 2006. Recently the internet users increased by 10-15%, mobile users 30-32 per 100 people, websites reached 10 000 in number. 80% of postal networks will be centralized in a computer center.
At present AzTV covers 98% of Azerbaijan’s territory and ITV (Public TV) covers 88%. Coverage of other broadcasters (ANS, Space, Lider, and ATV) is between 50% and 60%. According to these indicators, Azerbaijan is not behind in the world.

Azercell and Bakcell are important providers in the country. Rural population living in remote villages has access to radio broadcast.

**Georgia**

**Dr. Givi Mosashvili** presented the country report for Georgia. ICM system inside the country is well-organized. The activities of TECHINFORMI in this field through a new project ‘AgVANTAGE’ are important. This project publishes a monthly journal, a weekly informational bulletin and maintains the web site www.agroinfo.ge. However, there are still various problems such as lack of access to Internet and the language barrier for being able to use Internet resources in English.

Human factor and education plays important role in the effective usage of ICT. In Georgia, higher agrarian education and personnel training is performed by Georgian Agricultural University (GAU), which was recently by the Georgian Zooveterinary Institute, Georgian Subtropical Institute (GSI), Agricultural Institute of Batumi and GAU branches in Telavi and Marneuli.

In the last year, the country education system was reformed, which resulted in the change of the structure of education institutes and universities. Two-level student education system was accepted: in the first level (four years), the bachelors are trained, and then masters are trained in the second level (two years), after which a master may apply for doctorate. Besides, former technical schools that trained multifunctional workers, have been transformed into colleges (total 14). In the institutes, students are trained in information technology as well.

Since 2002 the World Bank is facilitating implementation of the Project of “Agricultural research, introduction-extension and training”, aimed at increase of the level of technical equipment of farmers’ household. An institutional reform was undertaken in the country to address this issue.

Since the last year, the government undertakes national presidential program “Information and communication provision of farmers and agro-entrepreneurs”. The program will supply farmers with necessary information and introduce a modern information and consultancy system.

Scientific provision of farmers, firms and rural organizations is performed by Georgian Academy of Agricultural Sciences (GAAS) and appropriate industry-wide SRIs (in total, 15), as well as GAU, GSI and Farmers’ Union.

At the current stage, the problem remains in building farmers’ awareness of the scientific achievements and their introduction in the farms. Up to now, there is no structure mechanism that would facilitate integration of agrarian science and farmers’ structures.

The major factors constraining development of ICT is financial problems and poor equipment.

Besides, it is important to organize TV broadcasts to highlight problems relevant to the agriculture, attracting qualified specialists.

In order to engage internet more effectively, it is necessary to increase the number of websites in Georgian language that would highlight agricultural information and technologies.
Kazakhstan


Governmental program for informatization of secondary education resulted in 100% computerization of secondary schools. Central communication unit was established, to which were connected telecommunication units of the Central office of the Ministry of Education and Science, as well as telecommunication units of regional departments of education. Electronic textbooks for secondary education institutions cover 25% of subjects studied in the school.

At the same time, development and utilization of information and communication technologies (ICT) in education is way behind the required:

- In Kazakhstan, there is 1 PC per 54 secondary school students
- Currently, only 44 % of Kazakh schools have access to Internet.
- In vocational schools (lyceums) and colleges, there is 1 PC per 31 and 25 students, respectively. Only 39 % of vocational schools (lyceums) and 51 % of colleges have access to Internet.
- In higher education there are separate local learning process management systems that do not have common interface with the information system.

Kyrgyzstan

Dr. Azilbek Usubaliev presented the country report for Kyrgyzstan on the current status of agriculture and ICT in Kyrgyzstan. There is a difficulty for developing of telecommunications in the rural areas due to lack of finances and unstable political situation in Kyrgyzstan. The Government of Kyrgyzstan has planned to achieve the following results in near future:

a. Provide reliable telecommunications and postal services to the rural areas
b. Provide access to national and international information services via Internet and E-mail for rural areas
c. Ensure, that the Radio and TV is available in all areas of Kyrgyzstan

- Scientific research in agriculture is conducted by the institutes of the Ministry of agriculture, water resources and processing industry of the Kyrgyz Republic, including all institutes of farming, livestock breeding, veterinary and pastures, irrigation.
• Scientific research in classification and soil studies in the country, creation of new agricultural varieties are conducted by the Scientific Research Institute of Farming and National Soil-Agrochemistry Station

• The Kyrgyz scientific-research institute of irrigation conducts scientific research in application of information technologies in agriculture management, automation of irrigation systems, hydromeliorative research, sets technical policies in irrigation and drainage. Conducts training and consultations locally, using training bases of the Department of water resources, and those of the extensive network of water users’ Associations.

• The Institute of livestock breeding, veterinary and pastures develops policies for cattle breeding, fodder production, rational use of pastures and prevention of livestock diseases

Tajikistan

Dr. G. Karimova presented the country report for Tajikistan. She stressed the very poor agriculture and ICT in Tajikistan. The current technical base of telecommunications is not capable to provide communications and informational services to all residents of Tajikistan, especially those who live in rural areas, which is exacerbated by low standards of life.

It is noteworthy that at this moment, existing technology does not allow providing access to communication and information services to all population of Tajikistan, and especially those living in the remote regions and rural areas. This is stipulated by the specific of geographic location of the country.

The progress of telecommunication technology is creating the conditions necessary for renovation and digitalizing of the existing telecom systems. It is very important to ensure competitiveness of telecom services.

Thanks to the existing significant intellectual capacity it was possible to create a unique institutional and information bases to study the condition of natural resources. Today, it is necessary to develop information technology on the basis of international standards on collection, processing and dissemination of the ecological information, and its monitoring. The existing legal system requires harmonization to correspond with the inter-industry regulations and comply with international standards.

In order to solve these problems and improve the operation of telecommunication system in the agrarian sector of the country, it is necessary to address the following issues:

• Training of highly qualified specialists;
• Availability of equipment and software;
• Creation of a unified information system;
• Access to information system;
• Strengthening the potential capacity of existing telecommunications;
• Increased awareness of population and farming enterprises on ICT application.

Turkmenistan

The participants from Turkmenistan could not participate in this workshop, but they kindly provided the country status report, presented by Dr. Zakir Khalikulov. For the last three years, the Government of Turkmenistan achieved significant progress on improving ICT for
development. Currently the Government is preparing new projects of law on ICT, electronic signatures, electronic document exchange and e-commerce.

During the years after independence, the country has developed a base for a purposed development of telecommunications based on the new digital equipment, attracting foreign investments and modern technologies. The priority was given to development of international and inter-city communication.

To the day in Turkmenistan over 20 digital automated telephone stations were set up, with a capacity of up to 100 thousand telephone numbers. Automatic inter-city telephone lines are available in all province and district centers, as well as in the cities.

Construction of optic-fiber line Transasia-Europe was accomplished, with the length of Turkmenistan segment being over 700 km. The start of its usage has significantly expanded the options to establish international communication channels and to contact the world, and connecting Turkmenistan to the Internet allowed the people in Ashgabat, Marhi and Turkmenabat to obtain information on the condition of the world market.

In the capital, as well as the velayat centers, the subscribers are able to use digital mobile phone and paging services.

To the date, an optic fiber line Ashgabat-Nebitdag-Turkmenbashi, of the total length of 638 km, Ashgabat – Dashauz, 655 km, Turkmenabat-Kerki-Kerkichi, 230 km, were constructed, along with microwave lines throughout Turkmenistan (total length - 994 km), digital telephony systems throughout Turkmenistan (for capacity of some 325 000 numbers), and an “Iridium” satellite system for 10 subscribers was introduced. International and inter-city telephone stations and channels were fully digitized.

Though there are good results, there are still several problems in this area: currently, governmental online services do not exist, the level of equipment of regional governmental organization, schools with new IT technologies remains low. The cost for Internet is very high, and it is not accessible at all in rural areas.

Uzbekistan

Mr. Umidjon Rahmonberdiev presented the country status report for Uzbekistan. In Uzbekistan ICT is growing rapidly; the Government recognized the need for developing strong ICT and is paying big attention to the telecommunications sector. During the last three years, the Government has achieved significant progress in promotion of “ICT for Development”. Several laws have been drafted in the areas of information, digital signature, electronic document circulation and electronic commerce, and adopted by the Parliament, which provided the basis for a wider application of ICT. This has supported the Government in its adherence to ICT development. In confirmation of its adherence to ICT, the Cabinet of Ministers has instructed all Government agencies to launch their web-sites by the end of 2002, and now practically all major ministries, committees, agencies and regional administrations have their web-sites.

The development of information and communication technologies becomes one of the major components of Uzbekistan’s economy, and is one of major factors of its economic growth. The basic aspects of strategy and the plan of action in the area of ICT and the Internet are addressed in the speech of the President of the Republic Uzbekistan in the parliamentary session in May 2001.

As of May 2003, several national programs have been developed aimed at the development of ICT and the Internet in Uzbekistan:
The national program for reconstruction and development of the telecommunications network of Uzbekistan for the period till 2010 (Decree of the Cabinet of Ministers №307 of 1 Aug 1995). The purpose of the Program is creation of a national network of telecommunications on the basis of digital data transfer systems and digital commutation equipment, providing for deep integration into the international system of telecommunications and overall satisfaction of the country’s population and economy with communication services.

The program for modernization of and improvement of the national data transfer network of Uzbekistan for the period from 1999 to 2003 (Decree of the Cabinet of Ministers № 193 of 22 April 1999). The purpose of the program is to identify the main organizational and technical measures on modernization and improvement of the data transfer network for the period 1999-2003 in order to ensure expansion of the network in the cities of Tashkent, Nukus and regional centers in 1999-2001 and in districts in 2000-2003.

The program for the development of computerization and ICT for the period 2002 -2010 (Decree of the Cabinet of Ministers №200 of 06 June 2002). The main purpose of the program is to respond to information needs of the community and to increase the competitiveness of the national economy in the international market, as well as further improvement of the legal and regulatory framework, standardization and certification.

General Discussion

Before the general discussion started, Dr. Ajit Maru has shared his comments. He said that we should ask countries to insist and follow their real potential to improve national ICT. He also said that it is not important that someone be an IT expert to improve ICT. The important thing is that you should know what exactly you want to do and how the desired information could be produced. Dr. Sahdev Singh from APAARI mentioned that providing technology is not a problem; but it should be kept in mind that Regional systems are human networks and their success resides in close collaboration. Websites should be designed in a way that everyone, even those without education, could use them.

During the general discussion, participants discussed the country reports, and some relevant facts and indicators. Dr. Oleg Shatberashvili indicated that, in general, ICT is one of the key fields that are rapidly growing in these countries and now these countries have the capacity to develop NAIS. Especially, he highlighted that although Kazakhstan is one of the countries, where ICT sector is growing rapidly, the cost for the internet connection still remains high than in other countries of CAC. Dr. Sakysh Erjanova stressed that the concerns of Dr. Oleg Shatberashvili are correct – yes, although economy and ICT of Kazakhstan are growing very fast, cost for the internet remains very high – but these days the cost for the internet is getting lower and in near future, it should become normal. Even today, Internet becomes more and more accessible for all citizens of the republic. You only need to tune up your modem to the number 8w7501010101! Kazakhtelekom will supply the bill which the client will be able to pay until the end of the next month.

Oleg Shatberashvili asked another question: after long researches, he found that in Uzbekistan, cellular network growth is almost equal to growth of the Internet, although in all other countries cellular network growth is much higher than Internet. He was interested in the reason for this. Mr. Umidjon Rahmonberdiev answering this question said that, in Uzbekistan, there is a special UNDP Internet project, called UzSciNet (http://www.uzsci.net), which created own Educational
network in Uzbekistan and connected to the internet all universities and many schools all over the country. This project has an activity, called “Global Connections and Exchange” (http://www.connect.uz) which is specifically created for Uzbekistan’s schools, by providing computers and high speed Internet connection. This project is running in Uzbekistan since 1997 and achieved very good results in connecting many stakeholders to the Internet. It plays very big role even today in increasing internet usage in Uzbekistan. Another National Internet service provider, UzNet, has own network in Uzbekistan, which connects almost 80% of all cities of Uzbekistan, and it has special discounts for schools and educational organizations, which encourage them to connect to the internet. The ministry of Education in Uzbekistan is supporting schools, colleges, lyceums with financing and capacity building allowing them to connect to the internet. Majority of schools are connected to the internet by dial-up connections.

Session III: Regional Presentations

Chairperson: Dr. Jamin Akimaliev
Co-chairperson: Zakir Khalikulov
Reporter: Dr. Sahdev Singh

Dr. Jamin Akimaliev opened the session with the comment that the 21st Century will be highly knowledge-based and therefore new approaches of knowledge management are needed to improve the agriculture sector and farming communities in Central Asia and the Caucasus (CAC) region. The session had two presentations on current status of information and communication technologies (ICT) and information and communication management (ICM) in agricultural research for development in the CAC region.

Dr. O. Shatberashvili presented a Synthesized Regional Report based on the country reports submitted by the national information nodal points (NINPs), FAO findings during a workshop in 2005, and his own earlier research in the area. He started his presentation with a broad overview of the CAC region and issues related to a rapid decline in public funding for the management of Scientific and Technical Information (STI) in various organizations such as libraries, universities and research institutions. However, he also pointed out that part of this decline is being compensated by gradual increase in the use of internet for STI management and growth of telecommunication services at a healthy pace in most CAC countries. It was recognized that regional and international ARD organizations have a greater role to play by making timely policy recommendations to the national systems and assisting them in developing new extension mechanisms in the rural areas, especially considering the digital divide between the rural and urban populations. Regular updates of existing agriculture related databases in the national systems and establishment or strengthening of national agricultural information systems through support from all national, regional and international stakeholders are critical. Another concern is that national systems should have regular NINPs, who can form a regional collaborative group to tackle the above issues.

The second presentation was on Development of AgroWeb Network and its collaboration with GFAR in CAC Region by Dr. Michal Demes, FAO. Dr. Demes informed that agricultural research professionals in all the eight countries of the CAC Region have free access to AGORA for STI and gave a brief overview of Agroweb development since its inception in 1998, its geographical coverage, local language features, thematic areas and past collaboration with GFAR. He pointed out that human capacity issues including frequent rotation of people in key positions and high level decision making issues needed an urgent attention to establish well-
defined and structured national agricultural information systems having a certain level of
authority and recognition within the national agricultural research systems. Other priorities for
the CAC region included guaranteed allocation of support and resources (human and financial)
for capacity building from FAO, CGIAR, and ICARDA at national level, possibilities for
partnership and collaborative activities with Agroweb experts and thematic networks, and
improvement in the quality of services provided by Agroweb national portals. The example of
Georgia was cited as best practice in terms of national Agroweb network development.

A general discussion was held after the above two presentations during which the following
important points were raised by the participants:

(1) Several participants identified lack of human capacity in the national systems coupled
with inadequate policy advocacy and sensitization of national system leaders as the
critical bottleneck for development of NAIS.
(2) It was generally recognized that better use of ICT and ICM in ARD is definitely needed
and the focus should be on how to accomplish this. While significant capacities also
exist in the region, using a synergistic approach a regional framework was necessary for
improved collaboration for and sustainability of NAIS and RAIS. As Agroweb focuses
on STI services for agricultural professionals, the CAC-RAIS will also cover farming
communities and their information needs such as extension information, weather reports
and market updates.
(3) It was suggested that there should be better communication between Agroweb and
CACAAARI, and the Agroweb portal could be an important part of the regional network or
the regional system (RAIS) which should be located and managed within the region.

The session ended with the final remarks from Dr. Jamin Akimaliev who concluded that we all
need to move forward for effective development of agriculture sector in the CAC region which is
agrarian in nature. The region requires improved information and knowledge sharing at various
levels and among various organizations, adequate funding and policy support to develop NAIS
and RAIS with a focus on the information needs of farmers and agricultural researchers.

Session IV: Plenary Session

Chairperson: Dr. Raj Paroda
Co-chairperson: Dr. Ajit Maru
Rapporteur: Mr. Umidon Rahmonberdiev

The first part of the session was lead by the Dr. Ajit Maru, and he informed participants about
forthcoming tasks for this session: discussion on strengthening of CAC-RAIS work plan and
improving National Agro Web Portals and linking them with CAC-RAIS.

Dr. Zakir Khalikulov stressed that these two issues are very important and future of CAC-RAIS
primarily depends on conclusions made today. He asked to give their suggestions on how CAC-
RAIS can be strengthened by one of the representatives from each country. The different
suggestions were given by each county, and some main suggestions were:

1. The institutional support has to be established for CAS-RAIS in the region
2. More financing needs to be attracted to the region from donors to establish National
   Agricultural Information Centers in each country
3. A strong linkage has to be established between National Agro Web portals and CAC-RAIS
4. Development of different online web services, databases for farmers, researchers, marketers should be undertaken
5. Human capacity building in CAC Countries should be strengthened
6. New projects should be developed by GFAR, CACAARI, ICARDA and FAO on establishment of RAIS and submitted for donor funding
7. Advocacy and sensitization for NARS leaders to promote the use of ICT for better ICM in ARD should be fostered

After the discussion, a brainstorming session to identify main directions for strengthening of CAC-RAIS activities was held. The following were identified:

1. Establish or identify the institution responsible for agricultural information system
2. Develop small informational products and services for scientists and farmers
3. Work out strategy on development of ICT for CAC countries
4. Develop Information Sources (National AgroWeb portals)
5. Collaborate with International Organizations
6. Undertake actions for advocacy and sensitization of NARS leaders

The second part of the Plenary Session was lead by Dr. Abdushukur Khanazarov, Deputy Minister of Agriculture of Uzbekistan. Dr. Raj Paroda indicated that although the above list of suggestions covers many important problems, there are still some other issues that this document did not cover and this document has to be revised, in discussion not only with the participants of this workshop, but with all NARS leaders. The participants agreed with Dr. Paroda. It was decided that Dr. Ajit Maru will work with a working group for revising this document.

After open and active discussion, Steering Committee of CAC-RAIS was elected with the following members:

From the CAC NARS:
1. Dr. Abdushukur Khanazarov (Uzbekistan) – Chairman
2. Dr. Oleg Shatberashvili (Georgia)
3. Acad. Tolib Nabiev (Tajikistan)
4. Dr. Asad Musayev (Azerbaijan)
5. Dr. Bayan Alimgazinova (Kazakhstan)

From international organizations:
1. Dr. Ajit Maru, GFAR
2. Dr. Zakir Khalikulov, ICARDA
3. Dr. Michal Demes, FAO SEUR/KCEF
Annex I

Regional Meeting of CAC RAIS

15-16 January 2007
Tashkent, Uzbekistan

Agenda

15 January, 2007 (Monday)

08:30 - 09:00  Registration

Inaugural session
Chairperson: Dr. Abdushukur Khanazarov
Co-chairperson: Dr. Raj Paroda
Rapporteur: Dr. Zakir Khalikulov

09:00 - 10:00  Welcome Addresses

- Opening Statement by Dr. Raj Paroda, Head, CGIAR-PFU Program and Regional Coordinator, ICARDA - CAC
- Inaugural Address and the Objectives of the RAIS Meeting by Dr. Abdushukur Khanazarov, Deputy Minister, Ministry of Agriculture and Water Resources of Uzbekistan and Executive Secretary, CAC Regional Forum,
- Statement on GFAR’s role in Regional Collaboration in ICM by Dr. Ajit Maru, Agricultural Research Officer, GFAR
- Introduction of Participants and Vote of Thanks - Dr. Zakir Khalikulov, PFU-CGIAR

10:00 - 10:30  Coffee Break and Group Photograph

Session I: Experiences of GFAR and Regional Fora
Chairperson: Dr. Samvel Avetisyan
Co-chairperson: Dr. Guram Aleksidze
Rapporteur: Mrs. Taraneh Ebrahimi

10:30 - 10:40  Approval of Agenda - Dr. Zakir Khalikulov

10:40 – 12:30  Experiences of Global and Regional Fora Information System

10:40 – 11:10  Presentation on "Developing National and Regional Agricultural Information Systems: Lessons Learned" - Dr. Ajit Maru

11:10 – 11:30  Presentation on APARIS -Dr. Sahdev Singh

11:30 – 11:50  Presentation on AARINENA-RAIS – Mrs. Taraneh Ebrahimi

12:10 – 12:30  Strengthening the existing CACAARI web site – Mr. Umidjon Rahmonberdiev, CACAARI-RAIS Web Manager

12:30 – 13:00  Discussion

13:00 - 14:00  Lunch

14:00 – 18:45  **Session II: Country Status Reports**
Chairperson: Dr. Asad Musaev
Co-chairperson: Dr. Ashir Saparmuradov
Rapporteur: Dr. G. Karimova

Country Reports: (20 min. of presentation and 15 min. of discussion)

- Armenia -Dr. Ashot Hovhannisyan
- Azerbaijan -Mr. Yagub Guliyev
- Georgia -Mr. Mosashvili

16:00 - 16:20  Coffee Break

16:00 - 16:20  **Session II: Country Status Reports (cont.)**
Chairperson: Dr. Bayan Alimgazinova
Co-chairperson: Dr. Zakir Khalikulov
Rapporteur: Mr. Yagub Guliyev

- Kazakhstan - Dr. (Mrs.) Sakish Erjanova
- Kyrgyzstan -Dr. Azilbek Usubaliev
- Tajikistan -Dr. G. Karimova
- Turkmenistan -Mr. Gayipov
- Uzbekistan - Mr. Umidjon Rahmonberdiev

19:30  Reception dinner  (Sorbon Restaurant)

16 January, 2007 (Tuesday)

**Session III: Regional Presentation**
Chairperson: Dr. Jamin Akimaliev
Co-chairperson: Acad. Tolib Nabiev
Rapporteur: Dr. Sahdev Singh

09:00 – 09:40  Presentation of the Regional Synthesis Report - Dr. O. Shatberashvili

09:40– 10:00  Development of AgroWeb Network and the collaboration with GFAR in CAC region – Dr. Michal Demes, FAO

10:00 – 10:45  General discussion on Strengths and Weaknesses of the National Agricultural Information System (NAIS)
10:45 - 11:05  Coffee Break

**Plenary Session:**
Chairperson: Dr. Raj Paroda  
Co-chairperson: Dr. Ajit Maru  
Rapporteur: Mr. Umidjon Rahmonberdiev

11:05 - 11:50  Establishment of the CAC-RAIS Steering Committee (SC)


12:10 – 13:00  Discussion on Strengthening Agro Web Portals and linking with CAC-RAIS

13:00 - 14:00  Lunch

14:00 – 15:00  Adoption of RAIS Work Plan of CACAARI for 2007-2009

15:30 – 16:00  Final Recommendations

16:00 - 16:30  Chairman’s Closing Remarks
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