

## **Information Technology Facilities**

The Center is taking advantage of modern information technology tools to make its work more efficient. CBSU is the focal point for computer services and support in ICARDA. It provides support on the use of all computer facilities, software packages and hardware maintenance. It also carries out development of application systems and databases, assists the scientists in biometrics, and trains the users.

All staff at ICARDA who requires access to network services has access, using the network guidelines published on our web site. The user is given a username for local/external e-mail access as required. The user can also use all network services such as the network printers, shared folders on the servers, and anti-virus software. The network is available 365 days a year except when individual servers require a maintenance window.

### ***Information Technology Environment***

Currently ICARDA has a mixture of computer equipment comprising servers, PCs, printers and other peripherals. These devices are connected to a fast network with a 1 Gbps optical fibre backbone and UTP 100 Mbps local-area Ethernet computer network.

A total of 20 of computer servers are installed to serve the various applications and operational needs: Domain Controllers, Microsoft Exchange servers, Oracle Applications 11i servers, file servers, Intranet servers, GIS server, Scientific applications servers, Web server. In addition we have a tape library system and a storage array network. About 500 PCs (desktop and laptop) are connected to the LAN. Miscellaneous includes 5 Apple Macintosh computers for art design work and some scientific applications. There are about 260 printers at ICARDA, with some 30 printers connected to the network. The network printers are mostly HP laser printers and a few different types of line printers. The rest of the printers are connected to PCs. All programs and units of ICARDA are connected to the Ethernet-based local area computer network. The Ethernet network connects the servers' room with the rest of the LAN. This allows PCs, servers and printers to connect to each other. Wireless connectivity is available both for internal users in the main auditorium and in CBSU training room, and for guests for Internet connectivity.

Since July 1999 ICARDA has been connected to the Internet with present transmission rate of 2 Mbps and Satellite with shared transmission rates of 512 Kbps – 2 Mbps. Our external e-mail service provider provides an Integrated Voice and Data Network (IVDN) service. The hub provides servers with instant messaging within the CGIAR centers and to the rest of the world. FTP servers are available for file transfer. Our external web site can be modified and updated easily with on-line access. Internet browsing is widely accessible within ICARDA.

### ***Technical support services***

- Hardware support for servers, network devices, cabling, printers, PCs
- Consulting and advisory service to assist with the purchase of appropriate models and makes of computer hardware for use at ICARDA
- Software support for operating systems
- 24 x7 Services for computer systems and LAN
- Support general office client PC software
- Dialup email services for traveling staff

- Support for Outreach offices – e-mail services, Virtual Private Networking
- Software management and administration of databases and data archiving
- Implementation of software standards and guidelines
- Consulting services for NARS/NGO's – Network planning and implementation
- Training for NARSs and ICARDA personnel

### ***Management Information Systems***

ICARDA uses an integrated management information system for its operations and the provision of timely management information using Oracle applications 11i. The application has a web-interface for all transactions and comprises most of the essential modules of a standard ERP including: General Ledger Accounts Payable, Purchasing, Inventory Control, Fixed Assets and Human Resources, customized Payroll System and Medical Bills System, Travel Module and a planned interface to CIAT Project Manager. The ICARDA School and outreach office have on-line access to the financial applications.

### ***Scientific Databases and Other Application systems***

Examples of databases developed and maintained by CBSU include:

- Meteorology Database
- Soil Database
- ICARDA Meta Data Database System
- SEEDMAN
- Long-term trials databases

Various systems and databases have been designed and developed to store, retrieve, share, manipulate, analyze and transmit research data, by user programs and units or sometimes through close cooperation with them. CBSU has been undertaking development of a number of web sites for several projects.

### ***Biometrics***

CBSU provides considerable biometric support to scientists in planning of experiments and surveys, analysis of data, drawing statistical inferences, presentation of results, and statistical review of scientific documents. We upgrade the skills in biometrics in the NARS and devise specialized applications of advanced techniques required by the research programs. We also develop biometric technique to meet the specific needs of the Center's research projects, for integrated gene management and natural resources management areas.

### ***Statistical Computing***

CBSU has enhanced the efficacy of statistical computing at the Center through training and the development of a number of computing modules for various designs and statistical analyses. There are 35 modules under current implementation. Users can make use of the online *Bio-Computing Facility* available on the Intranet for this purpose.