



INTERNATIONAL
FOUNDATION FOR
SCIENCE



Annual Report 2004

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Swiss National Science Foundation (SNSF), Switzerland
Syngenta Foundation for Sustainable Agriculture (SFSA), Switzerland
United Nations University (UNU)

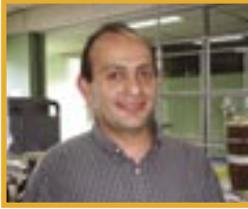


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Paying tribute to Bruno Messerli and continuing on his path



Photo: Eren Zink

Pierre Roger

■■■ Bruno Messerli was appointed IFS Trustee in 1997 and Chairman of the Board in 2000. A geographer specializing in earth sciences, he became Professor at the University of Bern in 1969, later Rector and then in 1996 Professor Emeritus. He researched mountain ecology and resources management on all continents, with a focus on the plight of mountain people and their struggle to survive. Bruno Messerli is a member of several Swiss and European academies and President of the International Geographical Union.

Despite his busy schedule Bruno Messerli was always there for IFS. He took part in IFS initiatives designed to make IFS "an organisation on the move": the establishment of the IFS "Monitoring and Evaluation System for Impact Assessment" in 2000; revision of the IFS mission in 2001; external evaluation 2000–2001 and the implementation of its recommendations; medium-term strategic plan for 2002–2004; selection of a new director in 2000 and in 2002; introduction of two new research areas (Water Resources and Social Sciences) and the 30th IFS anniversary in 2002; decision in 2004 to award 70 % of the grants to low-income countries with vulnerable scientific infrastructure, and linked to that, the development of a policy for mentorship.

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IFS is fortunate to have had Bruno Messerli as a Trustee and a Chairman. Meetings benefited from his calm, kind and smiling efficiency and IFS benefited from his perceptive advice. He is highly appreciated by the Board, the donors' representatives, the IFS staff, the Advisers and

the grantees who met him. In their name I would like to tell him of our deep gratitude.

As Bruno Messerli noted in the 2003 Annual Report, IFS now plans strategically for longer-term results. As chairman, I will work with IFS to implement its strategy and to help revive the role of Affiliated Organisations.

Looking ahead, the IFS mission appears to be more relevant than ever. Only a sustainable use of biological resources can provide food security and equitable rural development, while conserving the resource base for future generations.

IFS will continue to expand its core work of identifying and supporting promising young scientists. New approaches will be developed to support grantees from low-income countries, to help them become scientific leaders in their own regions and integrated into the world community of scientists.

In this process, IFS will need the support of regional mentors and laboratories.

Affiliated Organisations may play a greater role in recruiting applicants and mentors, identifying training facilities, co-organising workshops and training courses; and also in impact assessment, in developing alumni associations, and in fund raising activities.

During 2005 IFS will plan for 2006–2010. There is no doubt that the dedicated IFS staff, with the help of the IFS community, will produce a plan which stimulates IFS to fulfil its mandate well in a rapidly changing environment. IFS will continue to make a valuable contribution to capacity building in the developing world.

Pierre Roger

Chairman of the Board of Trustees (as of 1st Jan, 2005)

Message from the Director



■■■ In the IFS Medium-Term Strategic Plan 2002–2004, IFS set out to transform its programme so that it would mainly benefit young scientists in the less developed countries. In 2004 we took stock of our achievements. We analysed the sustainability of the results as an input in planning the long term programme for 2006–2010.

On the surface the results are impressive. The number of grants awarded has increased, a higher proportion of grantees come from less developed countries, and additional capacity enhancing activities have been introduced. Thus IFS is well on the way to achieve its goal to award 70% of grants by 2005 to scientists in less developed countries with vulnerable research infrastructure.

However this trend is not guaranteed to be sustainable. Let me share with you some of our thoughts on this.

Ideally, the institutions with which the grantees are associated should provide high quality academic support, including training in methodology, to their young generation of scientists. But many of the institutions from which IFS grantees are drawn at present are teaching institutions with limited research orientation. They are not equipped to provide adequate support. A grant in itself is not sufficient to guarantee research success for a young scientist in this type of situation, in an isolated and underfinanced institution.

IFS has succeeded in raising its visibility in the less developed countries with vulnerable research infrastructure and has encouraged young scientists to apply for grants. The response has been overwhelming in quantitative terms. Quality remains a problem. Discussions are now being held in the IFS family about how to help ambitious young scientists in underprivileged institutions to conceptualize solid research proposals and how

to achieve research success. This is the key question for the future.

Speaking generally, the rejected applications tend to be of high relevance for development issues but fail in terms of scientific rigour (such as defining research objective and hypothesis, research plan, and design of experiments). The positive side of this is that many of these applications do have potential and could be approved if properly supported. There is a strong case for the mentorship, thematic workshops, methodology courses and related value-adding support which IFS is developing.

Since IFS is concentrating its efforts on countries which are yet to make substantial investments in national scientific institutions, the challenge remains. The conclusion is that the IFS approach can only become sustainable if the granting programme is shored up by a capacity enhancing package of support to those grantees who have insufficient support in their home institutions. During the preparation of the new five-year programme, we will consult with stakeholders about how to achieve this. You are welcome to join the discussion.

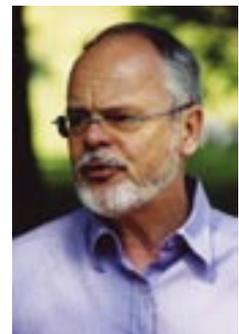


Photo: Brian Porter

Michael Ståhl

Michael Ståhl
Director

Research Grants



■■■ In 2004 the emphasis on prioritising grants to young scientists in less developed countries with vulnerable research infrastructure was further developed.

IFS received 1,456 applications for research grants in 2004. This is an increase from 2003 (1,356 applications) and from 2002 (893 applications). The number of approved grants for the year was 253. In 2003, 239 grants were approved and 187 in 2002. Approved grants

to scientists in Low Income and Lower Middle Income countries counted for 65% of all new grants, compared to 57% in 2003. Sub-Saharan African grantees received 46% of all 2004 grants. The proportion of new grants to women increased to 34%, from 32% in 2003.

Thus the trend towards more applications and more grants approved continued in 2004.

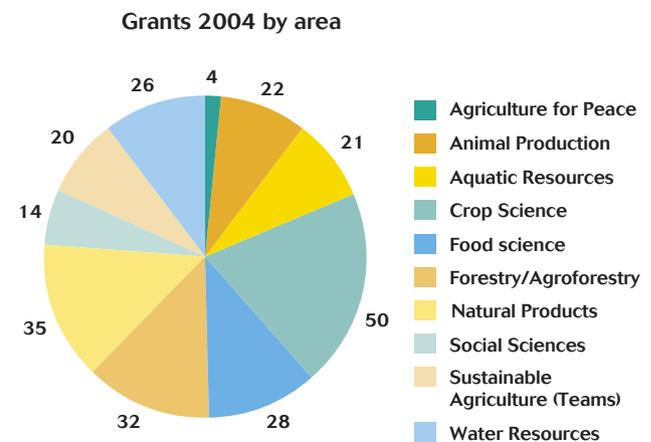
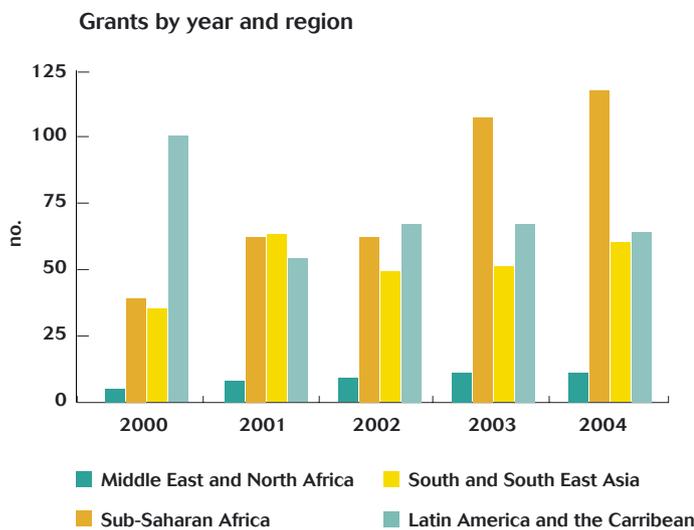


Fig. 1 Geographic distribution of IFS Grants 2000-2004

Fig. 2 Distribution of IFS Grants by research area 2004

All Applications by Year and Region

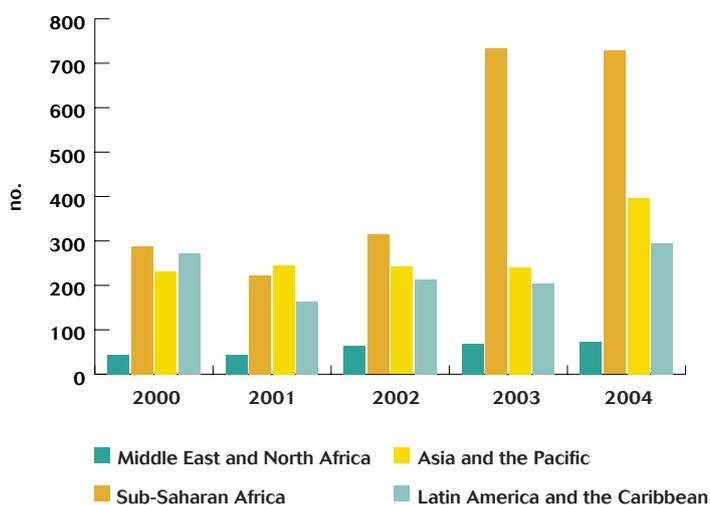


Fig. 3 Geographic distribution of applications for first IFS grant 2000-2004

Grants to Women

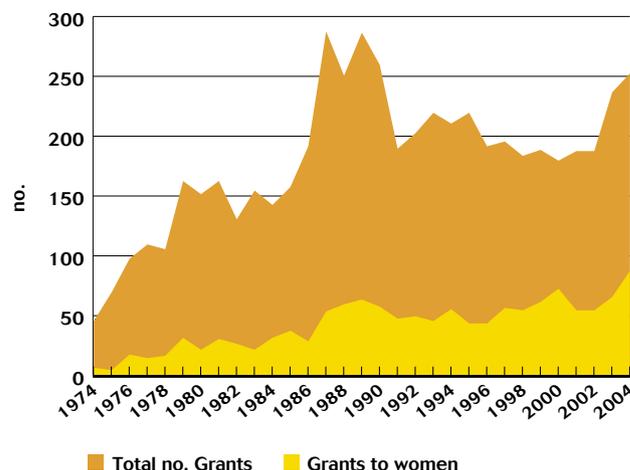


Fig. 4 Grants to women scientists

Countries which are eligible for IFS support are defined using indicators for assessment of their economic development and their scientific infrastructure.

Researchers based at institutions in the following categories of countries are, in principle, eligible to apply for IFS grants: Low Income Countries (LIC), Lower Middle Income Countries (LMIC) as well as some Upper Middle Income Countries (UMIC), namely those with a below-average GNI/Capita of that category of countries.

IFS gives priority to research applications of satisfactory scientific quality from researchers based in countries classified as LICs and LMICs. This category includes most countries in Sub-Saharan Africa, some countries in Central America and the Andean region as well as a number of countries in Asia. The

rationale for this policy is that researchers based in UMICs in general have much better access to national research funding and infrastructure than their colleagues in LICs and LMICs.

IFS also takes into consideration the scientific infrastructure of countries and gives priority to countries where scientists, who are at the beginning of their research career, have difficulty in accessing research funding and research tools.

By 2005 IFS aims to allocate up to 70% of the research grants to scientists from LICs and LMICs, while up to 30% of grants can be allocated to researchers from UMICs.

The policy to prioritise in this way was implemented in 2003. Fig. 5 and 6 illustrate how this policy has impacted on applications and grants.

Number of Applications received

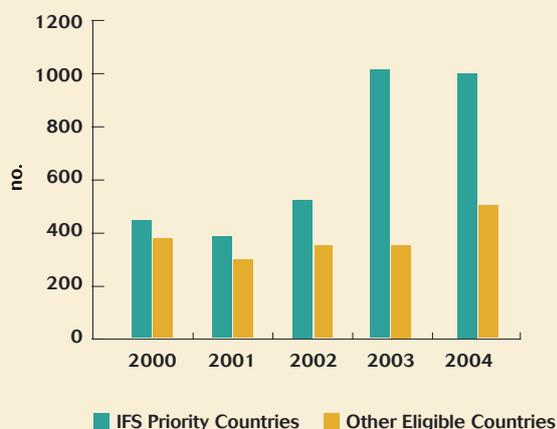


Fig. 5 Distribution of Applications received from IFS priority countries and other eligible countries

Number of Grants given



Fig. 6 Distribution of Grants given to IFS priority countries and other eligible countries

Social Sciences at IFS

— from special initiative to core activity



■■■ A special initiative to support social science research projects at IFS has developed to become a core activity within the main granting programme.

In 2004, 39 grants were approved for social science research projects. The first call for research proposals on social and economic aspects of the sustainable management of biological resources was issued late in 2002.

Background

In 2001 the Board of Trustees of IFS decided to extend research support to include social sciences as well as natural sciences. Advisers, grantees and applicants had argued that funding socio-economic and political research would contribute to a more comprehensive understanding of sustainable development. From this understanding should come better implementation of natural science for development.

The initiative was welcomed by donors. It was launched with support from the Swiss National Science Foundation, the Ministry of Foreign Affairs of the Netherlands and the Deutsche Forschungsgemeinschaft. They all provided specific funding additional to their core contribution to IFS. Other donors such as Sida SAREC, supporting the decision to expand into the social sciences, increased their core funding to IFS.

The initial phase

IFS started by exploring opportunities for collaboration with organisations which already supported social science research in the regions. A group of local resource people was formed to provide guidance in developing the initiative.

These activities led to the first IFS social science research call. Applicants were encouraged to integrate disciplinary

perspectives to look at the complex interactions between nature and society. Researchers from different disciplines were urged to apply for funding of individual research topics in collaboration. In one instance the IFS secretariat selected multiple individual applications and provided them with a thematic “umbrella”.

Integration into the regular IFS programme

IFS created a “home” for the social science initiative within the secretariat. A scientific programme coordinator was employed part-time to be responsible for it, with a half-time administrator added in 2004. A scientific advisory committee (SAC) for social sciences was created in 2003, with five senior scientists. It meets twice a year to assess, rank and recommend applications for approval and funding. Social science advisers, who also provide assessments of applications to feed into the SAC evaluation process, have been added to the IFS database. It listed 81 social science advisers by the end of 2004.

Partnerships

The social science initiative has provided an opportunity for IFS to work with strategic partners. Links have been forged with the Council for the Development of Social Science Research in Africa (CODESRIA), with joint workshops and co-funding of grants. A Memorandum of Understanding was signed to stimulate multidisciplinary research on “Sustainable Agriculture”.

Additional collaborations have been initiated with:

- the United Nations University Institute of Advanced Studies (UNU-IAS) to support joint fellowships for research projects on the relationship between agricultural production and risk factors for conflict (i.e. “Agriculture for Peace”);

- the Center for International Forestry Research (CIFOR) to provide support to foresters and socio-economists to explore the role of forests in poverty alleviation, and how to enhance that role through better policy formulation and implementation;
- the Conseil Ouest et Centre Africain pour la Recherche et le Développement Agricoles (CORAF-WECARD) to support multidisciplinary research, including projects on agricultural policy and commercialisation, and the marketing of agricultural produce;
- the CGIAR Challenge Programme on Water and Food for researchers working on a wide range of issues, including livelihoods and social organisation.

Other collaborations are being negotiated.

Achievements

Starting with 18 grants awarded from 50 Social Science applications in 2003, in 2004 IFS reviewed more than 200 applications and approved 39 grants. During August to December 2004 71 new applications were received. They will be evaluated early in 2005 before decisions on funding are taken in May.

A workshop was held with CIFOR in September 2004, and two workshops have been held with CODESRIA.

Integrated

As the 2005 granting season starts, Social Sciences are fully integrated in the IFS granting programme. Research proposals related to the social sciences draw upon both core and restricted funding from IFS donors.

But during both 2003 and 2004, funding was a limiting factor. High-quality research proposals recommended by IFS scientific committees could not be supported due to lack of funds. Additional workshops to integrate social and natural science approaches to key research problems will not be possible without additional funding.

IFS has therefore been actively fundraising for the social sciences. We are very grateful for the support we have gained from the UK Department for International Development (DFID) as well as our launch sponsors, and fundraising is continuing so that we may grow to meet more of the needs of developing country scientists.

Examples of research projects supported by Social Science research grants:

Conservation and development dilemmas: a study of cattle ranching expansion among rubber tapper communities in the Chico Mendes Extractive Reserve (CMER) in south-western Brazilian Amazonia.

Carlos Valerio Aguiar Gomes, Universidade Federal do Acre, Brazil.

Understanding which factors drive cattle ranching activities and land use changes will contribute to the strengthening of sustainable land-use management and income generation strategies in the CMER and in other extractive communities in Amazonia.

Legal pluralism and forest resource access and benefit sharing in Ghana: conflicts and potential for collaborative forest governance.

Emmanuel Marfo, Forestry Research Institute of Ghana.

With academic research augmented by field studies on 10 communities fringing three forest reserves in different geographical regions within the high forest zone of Ghana, this study is intended to provide insight into the various legal orders used by stakeholders to gain access and share forest benefits, factors motivating the use of specific legal forms, how the state law is contested, and the implications for collaborative forest management.

The prisoner's dilemma: people, institutions and exploitation of natural resources in Assam.

Anup Saikia, Gauhati University, India.

The use of forest resources in Karbi Anglong, India: and how land-use/land-cover changes are linked with the behaviour and perceptions of people, and the functioning of institutions. The study will seek ways in which concepts of sustainability can be built into existing institutional frameworks.

Research on water pollution in Burkina Faso

■■■ A water resource project in Burkina Faso is helping to implement water-related Millennium Development Goals, while providing a testing ground for different facets of IFS support. A small group of researchers is being co-ordinated as a thematic team; one mentor has become involved with the group; a new network is evolving from the working group; the IFS Affiliated Organisation in Burkina Faso, the Ministère des Enseignements Secondaire, Supérieur et de la Recherche Scientifique (MESSER), has acknowledged the initiative; training has been arranged on the scientific theme and a proposal writing workshop was held to encourage other researchers to participate.

The United Nation's Millennium Summit in 2000 set the goal to halve, by 2015, the number of people without sustainable access to safe drinking water. Water efficiency was identified as critical to achieving the goal, with a focus not just on quantity but on quality of water.

In order to reach the Millennium Goals, scientific research on water related issues has to be intensified, and a significant amount of this research should be conducted within those developing countries where there is a great need for improved water conditions. Unfortunately of course the infrastructure promoting research is not always well established in developing countries: researchers may lack not just funds but also properly functioning scientific equipment, access to literature, internet access and possibilities to meet with other researchers and attend international conferences.

Enter IFS. IFS has been helping to solve these sorts of research problems for the past 30 years. Now the IFS strategy for water resources is focussing on the implementation of the water-related Millennium Development Goals. IFS is working to strengthen the capacity for water resources



Photo: Cecilia Oman

It is a challenge to find efficient methods for market gardening that will not contaminate water and soil with pesticides.

research in developing countries through supporting young scientists in conducting high quality research while effectively building on local knowledge, local institutions, and local solutions for better water management.

Within the IFS Water research area it is possible for a group of researchers to coordinate their individual grants around a defined theme: to do collaborative research with thematic coordinated individual grants. The research group is developed around already established researchers, with one researcher appointed as coordinator.

The Burkina Faso project was initiated in 2004, to research pollution by pesticides and other organic pollutants. Pollution by pesticides is an important parameter affecting water quality in many developing countries: vast quantities of pesticides are used in the struggle to

increase food production, to protect harvested food, and to control vectors of diseases. Organochlorine pesticides have severe negative characteristics such as toxicity, persistence, bio-concentration and bio-magnification. Yet they are still in use in some developing countries, because they are inexpensive to manufacture and effective in pest control. Other toxic pesticides are also used. Consequently hazardous quantities of pesticide residues may be identified in the environment, including the water, in these countries.

In Burkina Faso there is a problem with pesticide polluted water. Rainwater dams provide drinking water for the 1.5 million inhabitants of Ouagadougou, the capital of Burkina Faso. But the quality of this water is threatened by pollutants from urban activities. In the rural zones drinking water is supplied by pumps and wells, but it may be polluted by the large quantities of pesticides which are used for agricultural activities.

Four IFS grantees are investigating pollution issues in the region. Professor Yvonne Bonzi-Coulibaly, Director of the Centre d'Études pour l'Aménagement et la Protection de l'Environnement (CEPAPE) at the University of Ouagadougou, is coordinating their research.

The researchers and their projects are:

Dr Bintou Sessouma:

Evaluation of pollution from organic pollutants in the waste water from the sewage pipe from the city of Ouagadougou: sources of pollution and the impact on the quality of drinking water.

(Evaluation de la pollution par les polluants organiques dans les eaux usées du canal d'évacuation dans la ville de Ouagadougou : sources de pollution et impacts sur la qualité de l'eau de consommation)

Dr Mabinty Bayo-Bangoura:

Environmental impact of small-scale village irrigation systems: monitoring the chemical pollution of water resources on two sites.

(Impacts environnementaux de la petite irrigation villageoise: Suivi de la pollution chimique des ressources en eau sur deux sites)

Mr Inoussa Zongo:

Contamination of everyday food from pollution in the water, soil and air: POPs (persistent organic pollutants) and heavy metals.

(Contamination des produits agricoles de grande consommation par les polluants de l'eau, du sol et de l'air : POPs et métaux lourds)

Dr Paul W. Savadogo:

Study of pesticide contamination of soils in the cotton and market gardening areas of Burkina Faso: influencing factors and bioremediation assays.

(Etude de la contamination des sols des zones cotonnières et maraîchères par les pesticides au Burkina Faso : Facteurs d'influence et essais de bioremediation)



Photo: Cecilia Oman

IFS grantees Bintou Sessouma and Inoussa Zongo, from the team researching pollution issues in Burkina Faso, inspect one of their sampling sites.

Associate Professor Malin Åkerblom, Programme Director of the International Science Programme (ISP) at Uppsala University, Sweden, has been appointed mentor to one of the researchers.

Thematic workshops are another way in which IFS can build scientific capacity. Planning began in 2004 for the January 2005 Burkina Faso International Workshop on "Pesticides and other organic pollutants in Africa—monitoring and mitigation". It was co-arranged and hosted by the University of Ouagadougou. Theoretical and practical research training was provided by Sune Eriksson, R&D Manager, AnalyCen Nordic AB, and by Dr Åkerblom.

The workshop also provided the opportunity for researchers to share experiences, establish new contacts, link to existing networks, develop equipment policies, and generate thematic reports.

Extending our 2004 Annual Report into early 2005, we can report that the workshop created the West African Network for the Chemical Analysis of Pesticides, WANCAP. In addition, participants agreed on a declaration expressing the need for research in this field and the declaration was signed by the Ministère des Enseignements Secondaire, Supérieur et de la Recherche Scientifique.

The workshop was coorganised by the Organisation for the Prohibition of Chemical Weapons (OPCW), and supported by OPCW, the Inter-Islamic Network on Water Resources Development and Management (INWRDAM), the Organisation of Islamic Conference Standing Committee on Scientific and Technological Cooperation (COM-STECH) and ISP at Uppsala University, Sweden.

Forging new partnerships



■ ■ ■ IFS continues to develop initiatives with partner organisations, to provide more opportunities for scientists in developing countries to undertake high quality research. In 2004 IFS entered into new partnerships with the following organisations.

Syngenta Foundation for Sustainable Agriculture

The collaboration with the Syngenta Foundation for Sustainable Agriculture focuses on capacity building for young scientists in Mali. The project includes courses on how to conceptualise and prepare research proposals, and providing grants to successful applicants.

Thematically, the research should focus on sustainable agricultural production. The workshops will be targeted at researchers in Mali in their early to mid-career.

IFS visited a number of research institutes and universities in Mali with Dr Oumar Niangado, Syngenta Foundation Delegate to West Africa, and plans to hold the first proposal conceptualisation and writing workshop in 2005.

United Nations Food and Agriculture Organization (FAO)

IFS and the FAO signed a Memorandum of Understanding (MoU) with the aim of sharing resources and developing joint activities to promote research and technology in developing countries. The agreement establishes a base for collaborative programmes and co-sponsoring and co-organization of seminars and workshops. New opportunities for exchange of information and expert consultations will lead to synergies in science capacity building.

Third World Organization for Women in Science (TWOWS)

IFS and TWOWS signed a Memorandum of Understand-



Photo: Richard Hall

IFS Director Michael Ståhl (left) and Vilmos Cserveny, Director, Office of External Relations and Policy Coordination, IAEA (International Atomic Energy Agency), mark the signing in Vienna of a Memorandum of Understanding between the two organisations.

ing with the purpose of providing more scientific career opportunities for women. IFS and TWOWS are collaborating on a plan to set up various capacity enhancing activities for young women scientists.

Inter-Islamic Network on Water Resources Development and Management (INWRDAM)

In 2004 IFS, COMSTECH and INWRDAM decided to pool their assets for building capacity in water resources research in developing countries.

COMSTECH—the Organization of Islamic Conference (OIC) Standing Committee on Scientific and Technological Cooperation—has been channelling support to young scientists in OIC Member States through the IFS granting programme since 1998. INWRDAM is the OIC technical organ specializing in water resources management and development programmes.



Photo: Brian Porter

IFS Scientific Programme Coordinator for Crop Science, Jean-Marc Leblanc (right), seconded to the IFS Secretariat from IRD in France, met Yonas Yemshaw from AFORNET in Kenya. IFS and AFORNET are initiating cooperation on forestry-related research in Africa.

A MoU and 10-year Plan of Action have initiated IFS, COMSTech and INWRDAM co-funding of research projects, workshops and seminars in OIC Member States on: water for livelihoods, water for agriculture, and the social and economic dimensions of water resources management.

The Flemish InterUniversity Council

IFS and VLIR, Brussels, Belgium signed a Memorandum of Understanding on funding research projects from researchers linked to one of the VLIR IUC partner universities – in Africa, Latin America and Asia. Calls for applications from these universities will be given in 2005.

Institut de recherche pour le développement (IRD)

IFS and IRD (the French Science Research Institute) Paris, France, signed a Memorandum of Understanding, recognising the benefits of close co-operation between the two organisations, given the synergies in their mutual goals of strengthening and developing scientific research capacity in developing countries. IRD and IFS have been informally linked for many years through scientific staff secondments. Jean-Marc Leblanc, IFS Scientific Programme Coordinator for Crop Science is at present on secondment from IRD.

International Atomic Energy Agency (IAEA)

The IAEA and IFS signed a Memorandum of Understanding which specifies the development of joint activities to address issues of mutual interest, designed to promote greater science and technology capacities in developing countries and to facilitate the building and consolidation of a global partnership in the scientific community.

The MoU envisages mutually fostering the adaptation and adoption of appropriate nuclear technologies in line with the national priorities of developing countries. Co-sponsoring and organising seminars and workshops are included, as is expert consultation in relevant fields at global, regional and national levels where practicable.

International Livestock Research Institute (ILRI)

IFS signed a Letter of Agreement with the International Livestock Research Institute (ILRI), based in Kenya, acting on behalf of Biosciences Eastern and Central Africa (BECA), which is a research network platform established under the auspices of the New Partnership for Africa's Development (NEPAD). IFS and BECA will collaborate in providing opportunities for young African researchers to conduct high quality science related to biosciences. The joint activities will be developed during 2005.



Photo: Brian Porter

Dzengo Mzengeza, Secretary General of NUSESA, the Network of Users of Scientific Equipment in Eastern and Southern Africa. NUSESA, located at the University of the Western Cape, South Africa, is involved in the maintenance of scientific equipment for IFS grantees, and is becoming involved in the procurement of equipment for grantees.

Emphasis on Latin America

■ ■ ■ IFS designated 2004 as a year to focus on Latin America. In the thirty years since IFS started providing research grants there have been 1737 grants distributed to young scientists in the Latin American and Caribbean region. Perhaps not surprisingly the greatest number of grants to this region have gone to Argentina (331), Mexico (275) and Brazil (258). One of these recipients, Enrique Galindo of Mexico, became our 2004 Sven Brohult awardee.

Chilean scientists have received 177 grants, Uruguay, with a population of just 3.4 million, has received 141, followed by Peru with 116. Cuba (population 11.3 million) has received 92 grants, ahead of Costa Rica (pop. 4m.) with 78, and Colombia (pop. 44m.) with 75. At the other end of the scale Belize (pop. 0.26 million) has received just one grant. Nicaragua and Haiti, two countries with the lowest gross national income (GNI) per capita in this region in World Bank statistics have received four and nine grants respectively.

IFS has delivered grants to scientists in almost all the countries in this region. And "if we were to judge by the number of scientific publications from Latin America in the last two decades, one would come to the conclusion that scientific research has improved greatly in this region of the developing world," said Dr Jorge Huete-Perez, of the University of Central America in Managua, Nicaragua.

The number of science and engineering articles published in a set of the world's most influential scientific and technical journals almost tripled between 1988 and 2001. (*Infobrief NSF 04-336 August 2004*, Derek L. Hill.) Most of the increase in the number of Latin American authored articles was concentrated in four countries: Argentina, Brazil, Chile, and Mexico. These countries share certain characteristics: a moderately high per capita income relative to other countries in the region, a relatively large



Photo: Manish Gupta

Angela Calderon, Panama, received an IFS grant in 2004, to work on the isolation and characterisation of compounds from Panamanian plants.

pool of scientists and engineers, and recent reform of their economies and scientific enterprise. Brazil and Mexico also raised expenditures for research and development during the early and mid-1990's.

On a per capita basis, Argentina and Chile produced more scientific articles than any other Latin American country, both averaging more than 70 articles published per 1 million inhabitants, 1999–2001. Uruguay (pop. 3.4m.) achieved 47.9 articles per 1m., ahead of Brazil at 38.8 and Mexico 31.8. Costa Rica (22.8), Venezuela (22.5) and Colombia (7.3) accounted for most of the remaining output.

Research conditions

We talked with some of our former and present grantees and advisers to get a snapshot of science in Latin America today.

One issue is echoed in many comments, and clearly stated by Professor Hermann Niemeyer from Chile: instability. "The situation can change very rapidly. Science is recognised by some as a long term investment, but it will have very low priority with governments facing economic problems. Science funding can easily be cut."

Another key issue, from Professor Carlos Galina of Mexico: "There is a huge variation in environmental conditions to do science."

Professor Alberto Nieto from Uruguay is passionate in his belief that the value chain of knowledge is dysfunctional for Latin American countries. "Research and development (R&D) is almost exclusively performed and funded by the public sector, mainly universities. There is no significant private involvement in R&D funding or in its execution, which is mainly done in public and university laboratories." Universities are investing in graduates, but without private sector employment opportunities there is an almost universal problem of a lack of jobs for science graduates, especially the post-doctoral generation. There are few jobs for scientists outside universities, and saturation of the job market within universities.

Top 10 recipient countries in Latin America & the Caribbean

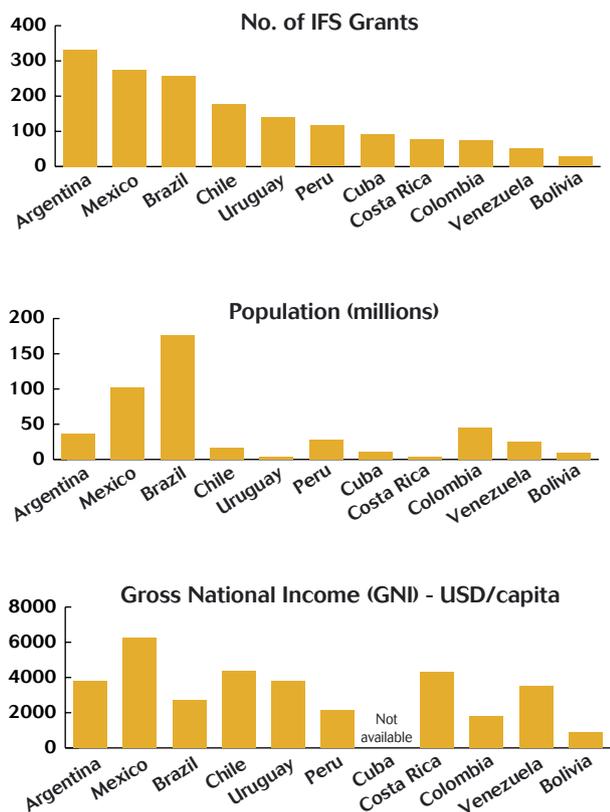


Photo: Ingrid Leemans

CIPAV researcher and IFS grantee Zoraida Calle (left) and co-researcher Eudaly Giraldo of Colombia inspect the endemic and endangered plant *Sanchezia penelli*.

Argentina

These issues are apparent even in Argentina, one of the Latin American countries to have increased its standing in the international scientific community. (*InfoBrief*)

"At the beginning of the 20th century Argentina educated generations of brilliant scientists, including Bernardo Houssay, winner of the 1947 Nobel Prize in Medicine, and Luis Federico Leloir, who received the 1970 Nobel Prize in Chemistry. Today, Argentina invests only 0.4 percent of its gross national product (GNP) in science and technology, well below the one percent widely accepted as a goal for developing countries." Dr Mariel Marder, 2004 IFS Jubilee Medal awardee.

Doing research in Argentina now depends very much on your geographic location. Faustino Siñeriz, director of research institute PROIMI said: "Most of the research institutes and facilities are in the central zone from Buenos Aires to Córdoba and Mendoza. The Internet II net goes in that direction. If you are in the South or North of the country things are very uneven. Some places are OK and in others the most basic infrastructure is lacking, especially in universities".

But Dr Siñeriz noted that government policy has changed to identify higher education and research as an investment and not an expenditure in the budget. "The budget for science has increased steadily for the last two years, though it is still less than 0.5% of GNP. Now we are in a crisis of growth for the first time after many, many years of stagnation, and research institutes and universities are bursting with the new wave of PhD students and the new researchers."



Photo: Ingrid Leemans

In the lab: IFS grantee Dr Alberto Giménez (right) & one of his students, Universidad Mayor de San Andrés, Bolivia.

Perhaps as a consequence, Argentina has the highest percentage of scientists emigrating from Latin America to the United States, according to a study by the Economy Commission for Latin America and the Caribbean (CEPAL), reported on SciDev.Net (11 May 2005). Dr Andres Solimano, an economist at CEPAL, said that Latin American countries spend a lot of money training scientists, but many of these end up leaving because of a lack of funding, jobs, or government interest in research. Their countries of origin are not seeing the benefits from their investment.

Variation

In many countries in Latin America there are zones of relative prosperity, geographic regions where the Internet works and research institutions if not flourishing at least function.

"Science and technology infrastructures in Brazil reflect the very uneven regional distribution of wealth and poverty. Research groups in four of the 26 states of this federal republic develop 75% of the scientific research activity." Dr Glauter Pinto de Souza (unpublished research paper).

"Doing research in Chile is probably similar to many other countries in the developing world. Little funding, strong competition for funds, lots of time invested in writing proposals, lots of time invested in writing reports (if you are awarded a grant!), lots of administration related to your research – lab maintenance, equipment maintenance, purchasing, etc." Professor Hermann Niemeyer.

Professor Carlos Galina says of Mexico "there are many Mexicos". Just 100 metres down the road from one

well-funded institution may be another with almost derelict laboratories and severely inadequate equipment.

"The situation is very similar in Brazil, Argentina and Chile," Carlos Galina said. "There are excellent institutions fully equipped and with well established scientific communities. There are institutions where certain departments are in the forefront of research and several others are not doing any research at all. But there are many institutions where the infrastructure, both human and laboratory facilities, are simply non-existent."

There are some advantages to doing research in Mexico: "It is just as easy or difficult as you want to see it" Prof Galina explained. "It is difficult because resources are limited and there is little research tradition in some areas. But it is easy because there is an army of eager students willing to learn and give you their time for free, hence many studies which would be very costly in a developed country, are quite feasible under Mexican conditions."

Colombia

Colombia faces a slightly different problem.

"Colombia has the last armed conflict in the Western hemisphere. With more than four decades of continuous violence, safety considerations limit research in Colombia in high priority geographic areas. Unsurprisingly, many scientists have migrated to safer nations." Enrique Murguieitio and Zoraida Calle of the Centre for Research on Sustainable Agriculture (CIPAV).

Colciencias, the main institution coordinating national science and technology in Colombia, has made an enormous effort to promote research groups and networks, though opportunities for young researchers vary greatly. Public and private investment in research is still among the lowest in Latin America.



Photo: Ingrid Leemans

Dr Ingrid Leemans (right), IFS Scientific Coordinator for Animal Production and Acquaculture, in discussion with Dr Jorge Huete-Perez and colleague in Nicaragua.

Panama

In Panama, less than 0.3% of the GNP is spent on research, consequently "it is challenging and sometimes frustrating" says Dr Mahabir Gupta, former grantee and IFS Trustee. "When I came to Panama in 1972 we did not have even test tubes. With hard work, we now have a fully fledged Center for Pharmacognostic Research on Panamanian Flora with an international reputation. The key has been to train people and work in a multidisciplinary team."

Although quality agricultural research and pioneer biomedical research have been done, it is not easy doing research in Panama as no financial support has been available locally. The Smithsonian Tropical Research Institute which has been carrying out top quality research in Panama for over 50 years, is funded by the US government. University staff in Panama have a very high teaching load and there is not much incentive for research. However since the new government took charge in September 2004, the National Secretariat of Science Technology and Innovation (SENACYT) has invited scientists to compete for grants in priority research areas.

Nicaragua

Nicaragua is the second poorest country in Latin America. With a population of 5.5 million people its GNI in 2003 was only USD 730, wrote Ernesto Medina and Edmundo Torres, of the Universidad Nacional Autónoma de Nicaragua, León.

Doing research in Nicaragua is a challenging experience. The number of problems that must be solved is enormous, but the overall research capacity of the country is extremely limited, relying mainly on public universities. The creation of research capacity at Nicaraguan Universities started in the 1980's, thanks to international cooperation. The Swedish Agency for Research Cooperation (SAREC) played an important role in this.

Dr Medina and Mr Torres look to their neighbouring country Costa Rica, as one that has built a strong national system for science and technology. Costa Rican investment in R&D was more than eight times that of Nicaragua.

Costa Rica

"In Costa Rica scientists are able to justify part of their workday as research activity. From the perspective of high income countries this advantage for maintaining the quality of academic staff may seem trivial: but the reality for most universities from low income countries, including those from Central America, is that research does not constitute a recognized formal activity." Dr Esteban

Chaves Olarte, NeTropica Coordinator.

Honduras

Honduras faces that research problem. It is a small country in the heart of Central America, mainly agricultural and with very little industrial or technological development. Not surprisingly "in Honduras the politicians do not see clearly the direct relationship between research and development, probably because financial resources are always very limited and covering the basic necessities of the population is always a priority over research" said Gustavo

Fontecha, who is now studying for his PhD at the Universidad Complutense de Madrid, Spain. Scientific research in Honduras has a very short history, and has been limited to areas such as clinical epidemiology, improvement of agricultural species like banana and other tropical fruits, ethnobotany, archaeology, and characterisation of plant and animal species.

Changing focus

Almost one third of the total IFS research grants since 1974 have supported scientists in Latin America. However if a country is deemed to have a sufficiently strong scientific infrastructure and a GNI consistently higher than the average of Upper Middle Income Countries (as defined in the World Bank Development Report), it no longer qualifies under the IFS mandate for "developing". In 1999 support for both Argentina and Uruguay began to be phased out from IFS core funding, and this year the IFS Board acknowledged that Mexico had reached the middle income threshold. From 2005 support for Mexican grantees will start to be phased out.

IFS is concentrating now on scientists in less developed countries with limited scientific infrastructure where the need is greatest. However precisely because of the poor infrastructure, the lack of a support system, simply providing grant funding on its own may not be sufficient.

"In the financially starved Bolivian university system, research has become a battle ground" Dr Alberto Gimenez



Photo: Ingrid Leemans

IFS grantee Maria Mercedes Roca from Bolivia, with a specimen of the Gliricidia tree on which she is doing research in Honduras.

Turba, Director of IIFB-UMSA, Bolivia, warns. "The few lecturers who despite lack of institutional support manage to obtain funding from outside sources, are often seen as a menace by their colleagues." Nevertheless, some very important research is being carried out (particularly in natural resources and traditional pharmacopoeias) in which IFS keeps having a pivotal role, Dr Gimenez said.

Private/public partnerships

Professor Nieto in Uruguay identifies a need for universities to help the private sector to enter the innovation pathway. The School of Chemistry at the Universidad de la República, Uruguay, created a Technology Pole, which is an incubator of R&D for existing companies.

He explained. "We make joint ventures with companies from the pharmaceutical and food sectors to facilitate private R&D by sharing risks and benefits, instead of the classic contract research model. The Pole invests its researchers and equipment, companies provide the running expenses and the plant engineers. We share the benefits according to the value each part provided to the project. Both parts (Pole and company) together design and manage the projects, and look for external funding if needed. We have just received EUR 2m. from the European Commission to support three years activity based on a business plan aimed at self sustainability."

The School of Engineering is taking a similar approach with the software industry. Prof Nieto suggests that by identifying appropriate partners Latin American science can share in a very feasible and sustainable economic development based on real value added.

Can IFS make a difference?

"IFS has done a tremendous job in providing grants for starting careers", Faustino Siñeriz says. "This support was decisive and opened many doors for me later on. It was the best grant I ever had, not in amount but for the facility to spend it the best way I could."

The IFS impact report on Mexico showed that IFS support led Mexican grantees to publish more frequently, more often in English, and more often in mainstream scientific journals. It often had a positive impact on institutional promotion of grantees, and on the award of national and international distinctions. "IFS contributed to the internationalization of the career of many grantees, was a catalyst for collaboration with other scientists, and opened doors to additional funding opportunities." (p.88) And by helping grantees to establish themselves as scientists in Mexico, it helped reduce probable brain drain.



Dr Mahabir Gupta (right), IFS Trustee, with his former student and fellow former IFS grantee Dr Pablo Solis, Panama.

IFS has made a difference by helping to form a critical mass of scientists, as Esteban Chaves Olarte noted in Costa Rica. "IFS support allowed several scientists to launch their research careers, when funding was even scarcer than it is today; and it promoted the creation of scientific groups providing support to individuals working together. Several researchers investigating snake envenomations received IFS grants that allowed them to synergise their scientific efforts and maximise their results, and a similar synergy has developed in our group studying brucellosis."

"In our Central American region, Costa Rica with its high academic and scientific standards is a very clear example of what international cooperation and the persistence of the local scientists can do" says Gustavo Fontecha from Honduras. "If we work hard together I have hope that we will be able to reach the dreams of sustainable development that we have for our country."

In Colombia there have been significant advances in education over the last few decades. Research groups have multiplied, there has been investment in PhD grants, the environment for science is improving. "Given the inequity in the access to research funding and the importance of developing more sub-regional research agendas, the effect of IFS can be described as catalytic." Enrique Murgueitio and Zoraida Calle. "It allows young researchers to become visible in the science and technology system. CIPAV owes its existence to IFS believing in young researchers with little scientific training, who were supported by a young, small organisation. Thanks to IFS support CIPAV has become a respected organisation with national and international credibility. We are now able to act as IFS partners and support young researchers in other countries."

Dr Huete-Perez from Nicaragua eloquently pleaded: "We need more research funding. IFS should continue to fund the best science projects and ideas of the great minds

in less developed countries; and to promote the consolidation of networks such as NeTropica, to pool scientists with others involved in scientific development.

We need scientific growth in Latin America to help our countries meet the challenges of globalisation, self-sustainability, development, and improved quality of life."

This is a challenge IFS is determined to face, through our increased emphasis on expanding scientific capacity in less developed countries. With the help of our IFS community of scientists, affiliated organisations, and donors, IFS support can continue to make a difference.

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Sex, scent and mosquito control

Or in more scientific language, sex pheromones, grass infusions, and the mosquito *Aedes aegypti*, the main urban vector of dengue and yellow fever in Latin America.

The research career of IFS grantee Dr Álvaro Eiras of Brazil is impacting on some insects in Latin America.

With his first IFS grant in 1996 Dr Eiras identified a sex pheromone from the tomato-fruit-borer *Neoleucinodes elegantalis*. The pheromone was patented by a Venezuelan research group and Dr Eiras. It is now commercially available and has been successfully used by tomato growers in Brazil and Venezuela to monitor the pest, reducing the amount of insecticide used in tomato production.

His second IFS grant in 2000, when Dr Eiras had moved to the Federal University of Minas Gerais (UFMG), was for his project "Identification and evaluation of the volatiles released by grass infusions that attract gravid female *Aedes aegypti* mosquitoes to ovitrap."

By 2004 this research had already achieved significant results. After identification of the active compounds first discovered by this project, the university applied for national and international patents. A spin-off company from the university, named Ecovec (www.ecovec.com) was launched in Brazil to use the oviposition attractants for monitoring programmes on the yellow fever and dengue mosquito *Aedes aegypti*. Today, the synthetic attractants are manufactured in the UK and commercially available as AtrAedes™ for worldwide marketing by Ecovec. The USA, Germany, Australia, Singapore, Peru and Panama are evaluating AtrAedes™ for possible monitoring programmes in their countries.

After the Brazilian government tested the AtrAedes™ in 10 cities, replacing the unpleasant smelling and variable quality grass infusion, they decided (in 2005) to use MosquiTRAP™ nationwide, within a dengue control programme. AtrAedes™ has been shown to be very effective, easy to use, low cost and much less labour intensive than grass infusions. During 2004 Dr Eiras:

- made a new patent for monitoring mosquitoes in urban areas, the Ecovec Intelligent Monitoring system: MosquiTRAP™ Kits (trap for capture and attractant for *Aedes* sp), and software that integrates all the collected field data, creating indices for risk prediction and geoprocessed maps;
- was invited to become a board member of the Brazilian National Program for Dengue Control. This programme sponsored by the Brazilian government (budget approximately USD 500 million) aims to control dengue in Brazil;
- had his work selected to represent the state of Minas Gerais at the Tech Open House in Washington, USA, in June, organised by the Brazilian Ministry of Technology and the National Institute of Standards and Technology (NIST) USA;
- published papers in international journals and conference proceedings, adding to his already substantial list of publications.

Álvaro Eiras says: "It all began with the IFS grant. Great isn't it?"

Professor Enrique Galindo seventh Sven Brohult Awardee

■ ■ ■ Professor Enrique Galindo of Mexico was presented with the seventh Sven Brohult Award for his research in the field of Bioprocess Engineering of highly complex fermentations. He received the award at a ceremony held at the International Atomic Energy Agency (IAEA), Vienna, Austria, in association with the IFS governance meetings in November. The Sven Brohult Award is the most prestigious of the IFS awards, bestowed once every three years.

Professor Galindo's career represents one of the most outstanding of a Latin American biotechnologist. It combines high-level science, successful developments in technology, human resources training, and a commitment to the promotion and development of biotechnology and bioengineering.

Enrique Galindo is Professor and Head of the Department of Cell Engineering and Biocatalysis of the Institute of Biotechnology of the National University of Mexico (IBT-UNAM).

Awarded his first IFS grant in 1988 for a project to design and construct a pilot scale proto-fermentor, in 1990 with a second grant Enrique Galindo furthered his mixing, mass transfer and power consumption studies. In 1992 his third grant funded research on the rheology and mixing of viscous fermentation broths. The accurate methods he developed to quantify viscosity effects and power consumption in biopolymer and antibiotic fermentation broths are of great scientific and technological importance.

Professor Galindo now leads a research group which is focusing on bioprocess engineering, particularly the understanding and improvement of processes involving rheologically and hydrodynamically complex fermentations, as well as the development and scale-up of bioprocesses.



Photo: Enrique Galindo

Enrique Galindo with a pilot fermentor for the cultivation of microorganisms, at the Bioprocess Scale-up Unit of the Institute of Biotechnology (UNAM), Cuernavaca, Mexico.

An important experimental infrastructure has been designed and built by Professor Galindo's group, particularly in the area of mixing and accurate power-drawn measurement. The equipment—built with IFS resources, along with equipment acquired with the support of other institutions—is unique in Latin America.

Prof Galindo's group has worked on different aspects of the production of microbial polysaccharides using xanthan gum (produced by the bacterium *Xanthomonas*

campestris) as one of the models. This has contributed to the development of new methods for the screening, preservation and characterization of xanthan-producing strains. It has also led to a better understanding of the different aspects of the biopolymer process engineering.

More recently, Professor Galindo has studied the production of alginate by *Azotobacter vinelandii*. Galindo's group has shown that the rigorous manipulation of fermentation conditions, as well as the use of genetically-engineered mutants, improves the potential for producing custom-made polymers, to be competitive with commercial alginate extracted from marine algae.

Part of Prof Galindo's research is intended to gain a better understanding of the complex interactions occurring in a fermentor between the microorganism and its environment, in order to develop improved fermentation processes. Strategies such as extractive fermentation and bio-elicitation used for aroma compounds production by the fungi *Trichoderma harzianum* have led to the development of a process which increases pyrone production ten-fold. This research has shown the critical role that hydrodynamic conditions play in metabolite production in the four-phase fermentation process.

Biotechnological processes developed during Prof Galindo's research that have been transferred to industry include processes for:

- the enzyme-mediated production of 6-aminopenicillanic acid;
- the production of yeast as inoculum in alcoholic fermentation; and
- the production of technical and food grade quality xanthan gum.

Pilot-scale technology to produce biological control agents to prevent anthracnose disease in mango has been developed by Prof Galindo's group. Mexico is the world's prime exporter of mangoes. Semi-commercial field tests of these biological agents in mango plantations have reduced anthracnose severity to similar or lower levels than those achieved by commercial chemical fungicides. Using these biological products minimises the use of chemical fungicides, and improves both the quality and shelf life of the mangoes.

Biological control agents containing *Trichoderma* have also been produced to control fungal diseases of other important Mexican exports, such as tomatoes.

Enrique Galindo has published more than 90 scientific papers, mainly in international peer-reviewed biotechnology or bioengineering journals. He regularly



Professor Enrique Galindo with his research group at the Institute of Biotechnology of the National University of Mexico (IBT-UNAM).

teaches an advanced course on Biochemical Engineering in the postgraduate program of the IBT-UNAM, and has supervised 22 postgraduate and 25 undergraduate theses.

Enrique Galindo is a member of the editorial board of the journal *Process Biochemistry* and has been invited to the Scientific Committees of the most important international conferences on Bioprocess Fluid Dynamics and Mixing. He organized (as co-chairman) the first three *International Symposia on Bioprocess Engineering* in 1994, 1997 and 2002, and is on the Executive Committee of the *North American Mixing Forum*.

Professor Galindo has been distinguished as National Researcher by the Mexican Science and Technology Council and honoured with the National Award of Scientific Research by the Mexican Academy of Science. He is a member of the Advisory Committee to the Mexican government on Science and Technology and was President (1998–2000) of the Mexican Society of Biotechnology and Bioengineering.

Professor Galindo received the IFS King Baudouin Award (1996) and Silver Jubilee Award (1999), and has been a Scientific Adviser for IFS since 1996.

Awards to IFS Grantees in 2004



■ ■ ■ IFS Scientific advisers, Affiliated Organisations and other IFS partners may nominate grantees for an award. Grantees in Sub-Saharan Africa are eligible for the IFS/Danida Award, while grantees outside that area are eligible for the IFS Jubilee Award. Each award is for USD 2,000.

IFS/Danida Awardees 2004



Professor Mukaila Kadiri,
Nigeria

Research project: "Cultivation of *Lentinus subnudus* (Polyporales, Polyporaceae) on plant wastes"

Institution: Department of Biological Sciences, University of Agriculture, Abeokuta

Professor Kadiri was awarded his first research grant in 1994, and

has just started drawing on his third grant. Numerous excellent publications have resulted from this research. Mukaila Kadiri credits the IFS grants with impacting positively on his career. He was appointed a professor of plant physiology in 1999.

Lentinus subnudus Berk is an indigenous Nigerian mushroom, highly-prized for its meaty taste and texture. Presently only picked in the wild during the rainy season, this research has shown the potential for cultivating the mushroom on uncomposted and composted substrates. *L. subnudus* was cultivated on wastes from cotton, rice straw and maize cob. Fruit bodies were also cultivated on treated and untreated wood logs of tropical hardwood trees. Research is continuing, to identify optimal conditions needed for sporophore production and economic uses for the spent mushroom substrate.



Dr John Mworia, Kenya

Research project: "The impact and distribution of invasive non-indigenous dicotyledons in a semi-arid area of Kenya"

Institution: Department of Botany, College of Biological and Physical Sciences, University of Nairobi

Dr Mworia received his first IFS research grant in 2001 to study an area

occupied by Maasai pastoralists that is faced with increasingly invasive non-indigenous dicotyledons, especially species of *Ipomea* which threaten livestock and wildlife productivity by reducing grass forage production. Environmental factors related to distribution were identified and the impact of the main problem species on grass biomass production was assessed. The results tend to support the new theory that resource fluctuation which results from disturbance increases invasibility.

Dr Mworia has just started his second IFS project, which aims to quantify the relationship of key disturbance regimes in semi-arid areas to invasibility by *Ipomea Hildebrandtii*, and to develop predictive spatial models of potential distribution and carrying capacity loss.

John Mworia said: "It is very difficult to get research funding for young scientists at the beginning of their career in our institutions. So when IFS gave me a grant for my research I was extremely thrilled and embraced the opportunity with both hands, and did my best.

In conducting this study not only did my experience in planning and implementing a field study improve but I also made useful contacts with other scientists working to solve the environmental problems facing our people.

Finally and very importantly the study contributed to my academic advancement. Thank you very much, IFS."

IFS Jubilee Awardees 2004



Dr Monica Moraes Ramirez,
Bolivia

Research project: "Structure, density and phenology of palm forests in the National Park Madidi, Bolivia"

Institution: Herbario Nacional de Bolivia, Instituto de Ecología, Universidad Mayor de San Andrés, La Paz

The citation for Dr Moraes' award notes her outstanding work under difficult local conditions in the field, and that the results of her work are being implemented in a national park management plan. Dr Moraes now occupies a key role in botany and plant geography in Bolivia for her work on native palms, and is developing an international reputation.

In her first IFS-supported research, Dr Moraes inventoried and classified 29 palm species in the Iturrealde Province in terms of local use. This was followed with research on palm forests in the Parque Nacional Madidi, to promote rational exploitation and sustainable forestry based on the natural productivity of selected palm species. She has published several papers in very reputable international journals, and on most of her 19 papers she is the sole author.

"IFS support has given me the opportunity to accomplish my own professional goals in certain research areas, and also to disseminate results," Monica Moraes said. "I have enjoyed the chance to interact with colleagues and through these grants I also learnt how to manage and lead a research project."

And the "difficult conditions"? Among many challenges, perhaps the most dramatic was the burning of one of her permanent research plots of palm species by the local community. Dr Moraes was forced to start again. But she acknowledges she learnt a valuable lesson on the importance of good interaction with local communities, both on specific research projects and on sharing expectations for best managing natural resources.



Dr Mariel Marder,
Argentina

Research project: "Synthesis of flavone derivatives, evaluation of their affinity for the central benzodiazepine receptor (BDZ-R) and pharmacological characterization"

Institution: Instituto de Química y Físicoquímica Biológicas (UBA-

CONICET), Buenos Aires

The search for benzodiazepine-like ligands in plants led to the discovery of a new class of medium-high affinity ligands with flavonoid structure. Dr Marder has been investigating a series of flavonoid derivatives involved in the modulation of anxiety, sedation, convulsion, myorelaxation, hypnotic and amnesic states. These compounds have high affinity for the benzodiazepine binding site of the gamma amino butyric acid receptor complex. Further experiments revealed flavone derivatives to be competitive ligands with partial agonistic and antagonistic profiles *in vitro* and *in vivo*. Research is continuing based on this discovery.

Dr Marder has produced an extensive body of extremely high quality research. She has obtained several patents, and been honoured with awards. These include the Faculty of Pharmacy and Biochemistry Award from the University of Buenos Aires for the best thesis of 1998. In 1999 Dr Marder and her colleagues received an award from the Argentinian Experimental Pharmacology Society for work that was noted in the journal *Drug Discovery Today* (DDT, 4(4). 187, 1999).

Mariel Marder obtained her first IFS grant in 1997, followed by a second grant in 1999 for the research project she completed in 2003. Today Dr Marder is a Career Investigator of the National Research Council (CONICET), and has a permanent teaching position at the University of Buenos Aires.

2004 Conferences and workshops with IFS participation



- Zambezi Forum on Higher Education in Africa, Johannesburg, South Africa. Organised by the World Bank, February.
- Design of the research programme on biotechnology in East Africa, workshop coordinated by SEI (Stockholm Environment Institute), Arusha, Tanzania, March.
- CSAE (Centre for the Studies of African Economies) conference on Growth, poverty reduction and human development in Africa, Oxford University, UK, March.
- 6th International Scientific meeting of the Cassava Biotechnology Network, Cali, Colombia, March.
- CORAF (Conseil Ouest et Centre Africain pour la Recherche et le Développement Agricole) Scientific and Technical Committee Annual Meeting, Dakar, Senegal, March.
- 5th International Workshop on Resource Mobilisation, Johannesburg, South Africa, March.
- CORAF General Assembly, Brazzaville, Congo, April.
- Decentralisation in Practice: Power Livelihoods and Cultural Meaning in West Africa, conference at Uppsala University, Sweden, May.
- Stockholm Water Symposium and the World Water Week in Stockholm, Sweden, August. Paper presented in collaboration with INWRDAM, on scientific capacity building related to issues in the reuse of greywater.
- Microfood 2004 conference, organised by the International Committee for Food Microbiology and Hygiene (ICFMH), Portoroz, Slovenia, September.
- CIFOR (Center for International Forestry Research) – PEN (Poverty Environment Network) workshop, Bogor, Indonesia, September. IFS organised the proposal writing workshop component of the workshop.
- 4th International Crop Science Congress (4ICSC) and the 5th Asian Crop Science Conference, Brisbane, Australia, September.
- Trees, Rain and Politics in Africa: the dynamics and politics of climatic and environmental change conference (the British Academy, The British Institute in Eastern Africa and St Antony's College) - Oxford University, UK, September.
- Crop Science Biotechnology conference, organised by Agence Universitaire de la Francophonie. Lome, Togo. October.
- NUSESA (Network of Users of Scientific Equipment in Eastern and Southern Africa) Annual Meetings, in association with the conference on Sustainable Development in the Chemical Field and the Sciences, Mauritius, October.



Photo: Brian Porter

Participants at the workshop on developing and writing competitive research proposals, held in Stockholm in April.

Thematic workshops

IFS was the organiser or co-organiser and sponsor of the following events:

- Semiochemicals and microbial antagonists: their role in integrated pest management in Latin America—workshop organised jointly with CATIE (Tropical Agricultural Research and Higher Education Centre) and MISTRA (Swedish Foundation for Environmentally Strategic Research), Turrialba, Costa Rica, March.
- Innovations for Development in Southern and Eastern Africa (IDESIA), Windhoek, Namibia, March. IFS organised the concluding workshop in connection with this special project.
- Developing and writing competitive research proposals, Lusaka, Zambia. A training workshop organised jointly with the International Centre for Research in Agroforestry (ICRAF), March.
- Developing and writing competitive research proposals, Nairobi, Kenya. A training workshop organised jointly with ICRAF, April.
- Developing and writing competitive research proposals, Stockholm, Sweden, April. IFS evaluated research concept notes on biotechnology in this training workshop organised jointly with the Stockholm Environment Institute (SEI).

The workshop was for the East-African PhD-students enrolled in the Bio-EARN PhD programme which is run by the SEI, with funding from the Swedish International Development Cooperation Agency (Sida). IFS Adviser Peter Wood, UK, together with IFS staff, offered training to twenty workshop participants from Ethiopia, Kenya, Tanzania and Uganda. Their hosting institutions in Sweden are the Swedish University of Agricultural Science (SLU), the Royal Institute of Technology (KTH) and Lund University.

- Developing and writing competitive research proposals: a regional training workshop organised jointly with IFS partner REDICA (the Central American Network of Engineering Institutions). REDICA hosted this workshop for 23 scientists conducting research related to the sustainable management of water resources. IFS provided funding and a much appreciated trainer, Argentine IFS Adviser Dr Edith Taleisnik. San Jose, Costa Rica, May.
- Developing and writing competitive research proposals, CIFOR, Bogor, Indonesia, September.



Photos: Ingrid Leemans

Some IFS grantees in Colombia. Clockwise from top right: Mario Guerrero; Piedad Cuellar; Liliana Mahecha; Sandra Pardo Carrasco; Patricia Sarria with Adviser Reg Preston; Monica Ramirez; Javier Rinco Velandia; Lilian Rodriguez; Jamie Gonzalez & Gonzalez Diaz. Centre: Enrique Murqueitio

The working year at IFS



■ ■ ■ **The working year at IFS** revolves around the core business: the mobilising of applications and selecting of grantees for research support. The all-important Scientific Advisory Committee (SAC) meetings for each of the eight research areas are fixed in two half-yearly cycles. Intersecting and overlapping with these are the Executive Committee and full Board of Trustees meetings, exercising governance review and policy making.

Around those set pieces revolve all the other elements of IFS activity. The workshops, the conferences, the meetings, discussions and travelling; the fundraising approaches to potential donors, the relationship building with existing sponsors, the investigation of new opportunities, the association with affiliated organisations, the negotiations on potential collaborations, the identifying of possible scientific advisers in each of the different areas, the preparation or working through of the short-term, medium-term and long-term strategic plans, and always the management of the full cycle of the grant application process. The calls for papers for special research initiatives, the publicising of the core research areas, the processing of applications, the photocopying. The contact with advisers, the communications with referees, the supplying of equipment, travel grants, advice, expertise, support and sometimes emergency help.

The management, development and maintenance of the database, the heart of the grant management system. The development and updating of the website, the IFS window for the world.

In short, the networking, fundraising, sponsoring and administration needed in constantly striving to best fulfil the IFS mandate, of building scientific capacity in developing countries to conduct quality research on the sustainable management of biological resources.

It takes a team of science managers and administrators, and a vast international network of scientists, from the Board of Trustees to the far flung researchers, but the enthusiasm and genuine desire to develop the research capability of young scientists to build scientific capacity works to fulfil Sven Brohult's founding vision: of expanding scientific knowledge in developing countries to improve people's livelihoods.

Governance meetings in 2004

The Executive Committee of the Board of Trustees met in Stockholm in May. Decisions taken at the meeting included:

- the Audited Financial Statement for 2003 was accepted
- approval for an IFS Regional Assembly to be held in Asia in 2005
- approval in principal for a mentorship project submitted by the secretariat.

The annual meetings of the Board of Trustees, its sub-committees and the Donors Group, were held in Vienna in November. The International Atomic Energy Agency (IAEA) hosted the meetings which included an IFS-IAEA joint seminar. This culminated in the signing of a Memorandum of Understanding.

The Board of Trustees endorsed a proposal from the secretariat to prepare a five year plan for 2006-2010 during 2005. IFS will consult widely with partners, donors and other stakeholders in preparation of the plan.

The Donors Group elected Dr Jürg Pfister of the Swiss National Science Foundation as their new chair.

Procurement of equipment for grantees in 2004

Grantees can choose to purchase equipment through their institutions or through IFS. Procurement services through IFS were requested by 141 grantees during 2004. Over half of all orders placed were directed to Africa, followed by Latin America with more than one-third and Asia with the balance. The total value of orders was SEK 3.8 million, (EUR 418,000).

The total budget allocated for equipment, chemicals and supplies represented three-quarters of the overall budget approved for all grants. Grantees from Sub-Saharan Africa requested 63% of their total budget for equipment, chemicals and supplies, while Asian grantees requested 76%, Latin American grantees 87%, and grantees from Middle East and North Africa, 92%. The countries in which grantees received most assistance with procuring equipment were Morocco, Cameroon, Benin, Burkina Faso, Kenya and Uganda.

IFS used African agencies to purchase 30 % of total procurements this year. The top supplier countries in number of orders placed were the USA, South Africa, France, Sweden and Germany.

Activities for 2004 included:

- Reaching agreement on collaboration (joint funding of research grants) with the Belgium based NGO Nutrition Third World, January.
- Reaching agreement with Stockholm Environment Institute (SEI) that IFS will:
 - help SEI to expand their contact network in Africa on biotechnology related research;
 - identify resource persons for SEI activities (through IFS advisers); and
 - help SEI to arrange a training course on how to develop research proposals for the SEI network of post-doctoral researchers. January.
- Discussions with the Department for International Development (DFID), United Kingdom regarding support for the IFS-CODESRIA Sustainable Agriculture Initiative, March.
- Organising the first Scientific Advisory Committee to review team research proposals submitted to the IFS-CODESRIA Sustainable Agriculture Initiative. Meeting hosted by the Forum for Agricultural Research in Africa (FARA), Accra, Ghana, April.
- Assistance to NUSESA (Network of Users of Scientific Equipment in Southern and Eastern Africa) to formulate a strategy document for funding.
- Mentorship programme for Agriculture for Peace grantees started, organised by the United Nations University Institute of Advanced Studies (UNU/IAS), March.
- Presentation of IFS at the University of Cape Coast, Ghana, April.
- Helping AFORNET (African Forestry Research Network) based at the African Academy of Sciences (AAS) to set up a database for their grantees, April.
- Participating in a seminar in connection with the external evaluation of AFORNET, September.
- Visit to the Malaysian Scientific Association in Kuala Lumpur in preparation for the 2005 IFS Regional Assembly (Asia), September.
- Launch of the IFS-CORAF joint initiative on agricultural research, October.
- IFS Seminar at the University of Nairobi, Kenya, October.
- IFS-International Water Management Institute (IWMI)/CGIAR joint initiative on "Water and Food" was launched in November.
- A substantive evaluation of the IFS research area Natural Products was initiated, to be completed early 2005.
- Scientific Advisory Committee (SAC) meetings of the research areas Animal Production (in Liverpool, UK), Natural Products (Barcelona, Spain), Water Resources (Stockholm), Forestry and Agroforestry (Dublin, Ireland), Crop Science (Accra, Ghana), Aquatic Resources (Pitlochry, Scotland), Food Science (in the Federal Research Centre for Nutrition Institute of Hygiene and Toxicology, Karlsruhe, Germany). April-May.
- The SAC meeting of the Social Sciences research area was held at the headquarters of the National Science Foundation in Bern, Switzerland, in April. A seminar on IFS was held at NSF and staff and students of the Swiss Tropical Institute, Basel, met with IFS people. The Social Sciences SAC meeting for the Sustainable Agriculture Initiative (CODESRIA) was held in Accra, Ghana.
- SAC meetings of the research areas Forestry and Agroforestry (Montpellier, France), Animal Production (Cali, Colombia), Social Sciences (Nairobi, Kenya), Water Resources (The Hague, The Netherlands, hosted by the Organisation for the Prohibition of Chemical Weapons) and Natural Products (Glasgow, Scotland) were held in October.
- Crop Science SAC met in November in Thiés, Senegal, while Food Science November SAC meeting was hosted by the Syngenta Foundation and the Institut d'Etudes Rurales (IER) in Mali. Aquatic Sciences SAC was in Ghent, Belgium.
- The secretariat took part in a two day seminar in December, to initiate planning of the IFS long term programme for 2006-2010.

Excerpt from the IFS Audited Financial Statement 2004



Administration Report

Information about the activities

■ ■ ■ For the year 2004, IFS provided support to approximately 2000 young scientists in developing countries in the form of research grants, travel grants to scientific meetings and conferences, feedback on research proposals including the failed applications, assistance in the purchasing of equipment and supplies, arrangement of workshops and training courses, network support and awards for scientific achievement. Two hundred fifty-three new research grants were awarded of which two hundred sixteen were first grants and thirty-seven were renewals. In addition, Programme Services included the Scientific Advisory Committee meetings where research grant applications were reviewed and recommended for funding, staff costs and allocated general and administrative costs to provide this support. In total, Programme Services expense totalled SEK 36 308 620 (EUR 4 031 000), or 90% of total expense, for the year 2004.

The IFS granting process includes the receipt and registration of the research grant applications and the internal pre-screening of all proposals. Thereafter, applications are sent to internationally established scientific advisers and experts for comment (IFS has approximately 1000 advisers in its database). The proposals are then reviewed and prioritised at the meetings of the Scientific Advisory Committees (SAC), these meetings are held twice each year with the participation of approximately ninety advisers. Upon the recommendations of the SACs, the IFS Director approves the research grants for funding. Thereafter, the Secretariat draws up the contracts for signature by the grantee, head of institution and the IFS Director. During the research period (one to three years, renewable twice), IFS provides supporting services to the grantee as described above.

The advisers and experts involved in the evaluations of the proposals do not receive remuneration for reviewing applications nor for participating in the SAC meetings. The estimated value of these contributed services is not reflected in this report.

The Audited Financial Statement for 2004 includes a comparison with the organisation's fiscal year that covered the period 28 November 2002 – 31 December 2003.

Financial Result

The Board of Trustees and Director recommend that the deficit for the year, SEK 1 362 857 (EUR 152 000) be offset against the accumulated surplus of SEK 4 395 013 (EUR 488 000). Of the resulting accumulated surplus of SEK 3 032 156 (EUR 336 000), SEK 2 000 000 (EUR 222 000) is set-aside as a "Board Designated Fund for Contingencies" as approved by the Executive Committee of the IFS Board of Trustees at its meeting held in Stockholm on 8 and 9 May 2004. The Board Designated Fund will be reflected in the Audited Financial Statement for 2005. The balance of SEK 1 032 156 (EUR 114 000) is carried-forward to the following year

Accounting Principles

The evaluations and assessments are in accordance with generally accepted accounting principles in Sweden. The Financial Statement is in conformance with the laws on annual financial reports.

Accounting for Contributions

The IFS programme is funded annually by various donor organisations. Some of the contributions are unrestricted (Core Funds) and some contain restrictions on their use (Donor Restricted Funds).

Core Funds

Core funds are used for all aspects of the on-going operations of IFS. Core funds are recorded at the time of official notification by the Donor on the accrual basis of accounting.

Donor Restricted Funds

Donor restricted funds are used in accordance with the restrictions placed by the contributor. Donor restricted funds are recorded at the time of official notification by the Donor as deferred revenue. These deferred revenues are accounted for as self-balancing funds and the Restricted Contributions are recognized in the year in which the related expenses are incurred (utilized).

Contributions not received as of 31 December are accounted for as Donor Receivables.

Research Grants

Research grants are recorded as grant expense and as a liability at the time that the grants are approved by the Director.

Receivables

Receivables are recorded according to an assessment of the amounts that are anticipated to be received.

Foreign Currency

Receivables and liabilities in foreign currency are accounted for in Swedish Crowns at the exchange rate as of the date of the Balance Sheet.

Furniture and Fixtures

Furniture and fixtures are recorded at cost and depreciated using the straight line method over a period of five years.

Leasing Agreements

Leasing agreements, irrespective of whether they are financial or operational, are accounted for as ordinary operational leases therefore the expenses are recorded as they are paid.

Statement of Income and Expense

(in thousands SEK) (SEK 1 = EUR 0.11)

| | 1 January 2004 - 31 December 2004 | 28 November 2002 - 31 December 2003 |
|--------------------------------------|--------------------------------------|--|
| Programme Revenue | | |
| Core Contributions | 28 373 | 27 462 |
| Donor Restricted Contributions | 8 743 | 11 764 |
| Grants Withdrawn | 1 237 | 1 331 |
| Other Programme Revenue | <u>240</u> | <u>34</u> |
| Total Programme Revenue | <u>38 593</u> | <u>40 591</u> |
| Programme Expense | | |
| Programme Services | 36 309 | 37 146 |
| Fundraising and Partnership Building | 2 444 | 2 063 |
| Management and General | <u>1 650</u> | <u>3 178</u> |
| Total Programme Expense | <u>40 403</u> | <u>42 387</u> |
| Programme Deficit | <u>-1 810</u> | <u>-1 796</u> |
| Interest Income and Expense | | |
| Interest Income | 447 | 526 |
| Interest Expense | <u> </u> | <u>3</u> |
| Net Interest Income and Expense | <u>447</u> | <u>523</u> |
| Net Deficit for the Period | <u>-1 363</u> | <u>-1 273</u> |

Balance Sheet

(in thousands SEK) (SEK 1 = EUR 0.11)

| | 31 December 2004 | 31 December 2003 |
|--|----------------------|----------------------|
| Assets | | |
| <i>Fixed Assets</i> | | |
| Tangible Assets | | |
| Furniture and Fixtures | 806 | 870 |
| Total Fixed Assets | <u>806</u> | <u>870</u> |
| <i>Current Assets</i> | | |
| Current Receivables | | |
| Donor Receivables | 4 422 | 1 893 |
| Other Receivables - SPP | 0 | 539 |
| Other Current Receivables | 121 | 35 |
| Prepaid Expense and Accrued Income | 641 | 569 |
| Total Current Receivables | <u>5 184</u> | <u>3 036</u> |
| Short-term Investments | 20 891 | 21 899 |
| Cash and Bank Balances | <u>2 795</u> | <u>3 317</u> |
| Total Current Assets | <u>28 870</u> | <u>28 252</u> |
| Total Assets | <u>29 676</u> | <u>29 122</u> |
| Fund Balances and Liabilities | | |
| <i>Fund Balances</i> | | |
| Accumulated Surplus, 1 January | 4 395 | 0 |
| Capital Contribution | | 5 668 |
| Deficit for the Period | -1 363 | -1 273 |
| Total Fund Balance | <u>3 032</u> | <u>4 395</u> |
| <i>Current Liabilities</i> | | |
| Research Grants Payable | 14 676 | 17 937 |
| Deferred Restricted Contributions | 8 689 | 3 599 |
| Accounts Payable | 1 987 | 1 774 |
| Other Current Liabilities | 432 | 426 |
| Accrued Expense and Prepaid Income | 860 | 991 |
| Total Current Liabilities | <u>26 644</u> | <u>24 727</u> |
| Total Fund Balances and Liabilities | <u>29 676</u> | <u>29 122</u> |
| Pledged Assets: liquid assets - provision for credit cards | 400 | 400 |
| Contingent Liabilities | None | None |

IFS Board of Trustees



Prof Bruno Messerli, Switzerland
Professor Emeritus, Institute of Geography, University of Bern, Switzerland. (Chairman)
[Term completed 2004: succeeded as Chairman by Dr Pierre Roger; succeeded as Trustee by Prof Dr Yola Verhaselt, Belgium]

Dr Pierre Roger, France
Director of Research (retired), Laboratory of Microbiology, Institut de Recherche pour le Développement (IRD), University of Provence, France
(Vice-Chairman; Chairman from 2005)

Prof Ana María Cetto, Mexico
Deputy Director General and Head of Technical Cooperation Department at the International Atomic Energy Agency (IAEA), Vienna, Austria

Prof Sara Feresu, Zimbabwe
Director, Institute of Environmental Studies, University of Zimbabwe, Harare, Zimbabwe

Dr Mahabir Gupta, Panama
International Co-ordinator, Fine Pharmaceutical Program, CYTED, Pharmacognosy Research Center, University of Panama, Panama
[Term completed 2004: succeeded by Dr Ernesto Medina, Nicaragua]

Dr Kauser Malik, Pakistan
Member (Bio Sciences), Pakistan Atomic Energy Commission, Pakistan

Dr Oumar Niangado, Mali
Delegate of the Foundation, Syngenta Foundation for Sustainable Agriculture, Mali

Dr Ivan Nielsen, Denmark
Chairman of the Institute of Biological Sciences, Department of Systemic Botany, University of Aarhus, Denmark

Prof Eva Selin Lindgren, Sweden
Professor, Environmental Physics, University College of Borås, Sweden
[Term completed 2004: succeeded by Prof Bo Mattiasson, Sweden]

Dr Ting-Kueh Soon, Malaysia
President, Malaysian Scientific Association, Malaysia

Ms Wendy White, USA
Director, Board on International Scientific Organizations, The National Academies, USA

Dr Michael Ståhl, Director, IFS (ex-officio)

IFS Staff News



Dr Jean-Marc Leblanc joined IFS early in 2004, on secondment from the Institut de Recherche pour le Développement (IRD), France. Dr Leblanc is a plant geneticist who worked in Africa for nearly 20 years, mainly on pearl millet and on acacia diversity. During his term at IFS Dr Leblanc is Scientific Programme Coordinator for Crop Science, and is managing IFS relations with French-speaking countries. As he worked with assessment and foresight at IRD, he also has a special interest in being involved in the IFS Impact Studies.

IFS bid farewell to Ingela Taxell, long-time Purchasing Manager, at the end of May. Ms Taxell joined IFS in 1989, so for 16 years she has been organising equipment and supplies for IFS Grantees working with animal production, aquaculture, food science, natural products and water resources. Her commitment to improve the working environment of scientists in developing countries was also

seen in her work with the Network of Users of Scientific Equipment in Eastern and Southern Africa (NUSESA).

Dr Ulrika Huss worked intensively on a research project for IFS, for the evaluation of the Natural Products research area.

Sri Sahlin, who joined IFS in January (on a fixed term contract) as Programme Administrator for Food Science and Social Sciences, has worked in international organisations (ILO, Asian Development Bank, GTZ) as well as in a diplomatic mission. Ms Sahlin is from Indonesia, and lived and worked in Canada for several years.

Tanja Lundén left IFS after working here for five years, most recently in communication.

Lauresther Ekbäck joined the IFS Secretariat in November as Registration and Alumni Administrator. She adds another country to the international community at IFS, as Lauresther comes from Brazil.

IFS Affiliated Organisations 2004

National Organisations

Argentina

- Academia Nacional de Ciencias Exactas, Físicas y Naturales (ANCEFN)
- Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET)

Australia

- Australian Academy of Science (AAS)

Austria

- Fonds zur Förderung der Wissenschaftlichen Forschung (FWF)
- Österreichische Akademie der Wissenschaften (ÖAW)

Bangladesh

- Bangladesh Council of Scientific and Industrial Research (BCSIR)

Belgium

- Académie Royale des Sciences d'Outre-Mer (ARSOM)
- Académie Royale des Sciences des Lettres et des Beaux-Arts de Belgique
- Koninklijke Academie voor Wetenschappen, Letteren en Schone Kunsten van België (KVAB)

Bolivia

- Academia Nacional de Ciencias de Bolivia (ANCB)

Brazil

- Academia Brasileira de Ciências (ABC)
- Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPQ)
- Fundação Oswaldo Cruz (FIOCRUZ)

Burkina Faso

- Ministère des Enseignements Secondaire, Supérieur et de la Recherche Scientifique (MESSER)

Cameroon

- Ministry of Scientific and Technical Research

Central African Republic

- Ministère des Enseignements de la Coordination des Recherches et de la Technologie

Chad

- Direction de la Recherche Scientifique et Technique, MESRS

Chile

- Academia Chilena de Ciencias
- Comisión Nacional de Investigación Científica y Tecnológica (CONICYT)

China

- Chinese Academy of Sciences (CAS)

Colombia

- Academia Colombiana de Ciencias Exactas, Físicas y Naturales (ACCEFYN)
- Centro para la Investigación en Sistemas Sostenibles de Producción Agropecuaria (CIPAV)
- Instituto Colombiano para el Desarrollo de la Ciencia y Tecnología (COLCIENCIAS)

Congo (Brazzaville)

- Direction Générale de la Recherche Scientifique et Technique, MENRST

Costa Rica

- Consejo Nacional de Investigaciones Científicas y Tecnológicas (CONICIT)

Côte d'Ivoire

- Fédération des Associations Scientifiques de Côte d'Ivoire (FEDASCI)

Cuba

- Academia de Ciencias de Cuba (ACC)
- Ministry for Foreign Investment and Economic Cooperation

Denmark

- Akademiet for de Tekniske Videnskaber (ATV)
- Det Kongelige Danske Videnskaberne Selskab (RDVS)

Ecuador

- Fundación para la Ciencia y la Tecnología (FUNDACYT)

Egypt

- Academy of Scientific Research and Technology (ASRT)

El Salvador

- Consejo Nacional de Ciencia y Tecnología (CONACYT)

Ethiopia

- Ethiopian Science and Technology Commission (ESTC)

Finland

- Delegation of the Finnish Academies of Science and Letters

France

- Académie des Sciences
- Centre de Coopération Inter-nationale en Recherche Agronomique pour le Développement (CIRAD)
- Institut National de la Recherche Agronomique (INRA)
- Institut de Recherche pour le Développement (IRD, formerly ORSTOM)

Germany

- Deutsche Forschungsgemeinschaft (DFG)

Ghana

- Council for Scientific and Industrial Research (CSIR)

Guinea

- Direction Nationale de la Recherche Scientifique et Technique

Guinea-Bissau

- Instituto Nacional de Estudos e Pesquisa (INEP)

Guyana

- Institute of Applied Science and Technology

Haiti

- Unité de Science et de Technologies Appliquées

Honduras

- Consejo Hondureño de Ciencia y Tecnología (COHCIT)

India

- Indian National Science Academy (INSA)

Indonesia

- Lembaga Ilmu Pengetahuan Indonesia (LIPI)

Israel

- The Israel Academy of Sciences and Humanities

Jamaica

- Scientific Research Council (SRC)

Jordan

- Royal Scientific Society (RSS)

Kenya

- Kenya Agricultural Research Institute (KARI)
- Kenya National Academy of Sciences (KNAS)

Korea DPR (North)

- Academy of Sciences of DPR Korea

Korea R (South)

- National Academy of Sciences (NAS)

Kuwait

- Kuwait Institute for Scientific Research (KISR)

Latvia

- Latvian Academy of Sciences (LAS)

Lesotho

- The National University of Lesotho (NUL)

Liberia

- University of Liberia (UL)

Madagascar

- Académie National Malgache

Malawi

- National Research Council of Malawi (NRCM)

Malaysia

- Malaysian Scientific Association (MSA)
- Ministry of Science, Technology and Innovation

Mali

- Centre National de la Recherche Scientifique et Technologique (CNRST)
- Comité National de la Recherche Agricole (CNRA)

Mexico

- Consejo Nacional de Ciencia y Tecnología (CONACYT)

Mongolia

- Mongolian Academy of Sciences

Morocco

- Centre National de Coordination et de Planification de la Recherche Scientifique et Technique (CNR)
- Institut Agronomique et Vétérinaire Hassan II

Mozambique

- Universidade Eduardo Mondlane (UEM)
- The Scientific Research Association of Mozambique (AICIMO)

Nepal

- Royal Nepal Academy of Science and Technology (RONAST)

Netherlands

- Koninklijke Nederlandse Akademie van Wetenschappen (KNAW)

Niger

- Université Abdou Moumouni

Nigeria

- Federal Ministry of Science and Technology (FMST)
- The Nigerian Academy of Science (NAS)

Norway

- Det Norske Videnskaps-Akademi (DNVA)

Pakistan

- Pakistan Council for Science and Technology (PCST)

Panama

- Secretaria Nacional de Ciencia y Tecnología e Innovación (SENACYT)
- Universidad de Panamá

Papua New Guinea

- The University of Papua New Guinea

Peru

- Consejo Nacional de Ciencia y Tecnología (CONCYTEC)

Philippines

- National Research Council of the Philippines (NRCP)

Poland

- Polish Academy of Sciences (PAS)

Saudi Arabia

- King Abdulaziz City for Science and Technology (KACST)

Senegal

- Délégation aux Affaires Scientifiques et Techniques, MRST

Seychelles

- Seychelles Bureau of Standards (SBS)

Sierra Leone

- Institute of Agricultural Research (IAR)

South Africa

- National Research Foundation (NRF)

Sri Lanka

- National Science Foundation (NSF)

Sudan

- National Centre for Research (NCR)

Sweden

- Ingenjörsvetenskapsakademien (IVA)
- Kungliga Skogs- och Lantbruksakademien (KSLA)
- Kungliga Vetenskapsakademien (KVA)

Switzerland

- Conference of the Swiss Scientific Academies (CASS)
- Schweizerischer Nationalfonds zur Förderung der Wissenschaftlichen Forschung (SNF)

Tanzania

- Tanzania Commission for Science and Technology (COSTECH)

Thailand

- National Research Council (NRC)
- The Thailand Research Fund (TRF)

Tunisia

- Direction Générale de la Recherche Scientifique et Technique, MES

Uganda

- National Agricultural Research Organisation (NARO)
- Uganda National Council for Science and Technology (UNCST)

United Kingdom

- The Royal Society
- Natural Resources Institute (NRI)

Uruguay

- Programa de Desarrollo de las Ciencias Básicas (PEDECIBA)

USA

- American Academy of Arts and Sciences (AAAS)
- National Academy of Sciences (NAS)
- New York Academy of Sciences (NYAS)

Venezuela

- Consejo Nacional de Investigaciones Científicas y Tecnológicas (CONICIT)

Viet Nam

- Ministry for Science, Technology and Environment (MOSTE)

Zambia

- National Institute for Scientific and Industrial Research (NISIR)

Zimbabwe

- Scientific and Industrial Research and Development Centre (SIRDC)
- University of Zimbabwe

Regional Organisations**Africa**

- Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA)
- Association of African Universities (AAU)
- Institut du Sahel (INSAH)
- The African Academy of Sciences (AAS)
- West and Central African Council for Agricultural Research and Development (WECARD/CORAF)

- Western Indian Ocean Marine Science Association (WIOMSA)

Latin America and the Caribbean

- Centro Agronómico Tropical de Investigación y Enseñanza (CATIE)
- The Caribbean Academy of Sciences (CAS)
- Caribbean Agricultural Research and Development Institute (CARDI)

International Organisations

- BioNET-INTERNATIONAL (The Global Network for Taxonomy)
- International Organization for Chemical Sciences in Development (IOCD)
- International Union of Forest Research Organizations (IUFRO)
- The Academy of Sciences for the Developing World (TWAS)

Consultative Group on International Agricultural Research (CGIAR):

- CGIAR Secretariat
- Centro Internacional de Agricultura Tropical (CIAT)
- Centre for International Forestry Research (CIFOR)
- International Centre for Agricultural Research in the Dry Areas (ICARDA)
- World Fish Center
- International Centre for Research in Agroforestry (ICRAF)
- International Plant Genetic Resources Institute (IPGRI)
- International Service for National Agricultural Research (ISNAR)
- International Water Management Institute (IWMI)

French Summary

Un regard sur l'année 2004



■ ■ ■ En 2004 l'IFS a continué à renforcer son aide aux jeunes scientifiques des pays les moins avancés en attribuant davantage d'allocations, en soutenant plus de chercheurs et en prenant des initiatives propres à renforcer les capacités scientifiques de ces pays. En 2005, le Fondation devrait atteindre son objectif, à savoir attribuer 70% de ses allocations aux chercheurs des pays dont l'infrastructure scientifique est vulnérable.

Toutefois, ce choix d'objectif comporte à terme des conséquences que l'IFS analyse de la façon suivante : le fait d'octroyer une allocation de recherche (et seulement une allocation de recherche) à des chercheurs travaillant dans des institutions qui ne leur procurent pas un environnement académique adéquat, n'est pas, en soi, un gage de succès. Partant, l'IFS considère que son programme de bourses doit être renforcé par un ensemble de mesures de soutien qui, inévitablement, requerront davantage de fonds.

La Fondation continue activement à collecter des fonds et à chercher de nouveaux partenaires dans le but de créer des synergies et d'établir de nouvelles opportunités de collaboration avec d'autres organisations afin d'accomplir sa mission de renforcement des capacités scientifiques. Le nouveau président de la Fondation, Pierre Roger, insiste sur le fait que seule la gestion durable des ressources biologiques peut créer les conditions nécessaires à la sûreté alimentaire et au développement rural équitable sans aliéner l'avenir des générations futures. L'IFS doit donc poursuivre son activité principale et continuer à identifier et à aider de jeunes chercheurs prometteurs.

L'année 2004 a vu l'initiative spécifique pour le renforcement des sciences sociales se développer et devenir une activité permanente intégrée au programme

scientifique de l'IFS. Dans le domaine des recherches sur les Ressources Aquatiques, la Fondation contribue au développement des capacités scientifiques du Burkina Faso en soutenant un groupe de scientifiques menant des recherches sur la pollution due aux pesticides ou aux polluants organiques.

Les défis et les succès de l'approche de l'IFS sont mis en évidence dans l'important article de ce rapport sur l'Amérique Latine et les Caraïbes. Ainsi, cette partie du monde a reçu 1737 allocations de recherche durant les 30 dernières années, soit presque un tiers du total des allocations versées par l'IFS. La carrière scientifique du Professeur Enrique Galindo, récipiendaire du Prix Sven Brohult, ancien allocataire de l'IFS (trois bourses lui ont été attribuées) est un remarquable exemple, concernant le Mexique, du succès de la vision de l'IFS. Il en est de même du jeune chercheur brésilien, le Dr Álvaro Eiras, dont les recherches sont en train de devenir un succès commercial dans la lutte contre le moustique responsable de la dengue et dont la reconnaissance donne à l'IFS un crédit considérable « tout a commencé grâce à une allocation de l'IFS » dit-il... « Fantastique n'est-ce pas ? »

De nombreux scientifiques latino-américains mettent en évidence trois éléments clés qui pénalisent l'exercice de la recherche : l'instabilité, les importantes variations des conditions d'exercice de la recherche et l'absence de débouchés pour les jeunes chercheurs. Toutefois le rôle de l'IFS est de plus en plus perçu comme un élément suscitant l'espoir et deux chercheurs colombiens l'expriment en disant que l'aide de l'IFS peut avoir un effet catalytique, permettant à de jeunes chercheurs de construire et de développer leur crédibilité scientifique tant au niveau national qu'international.

IFS Mission Statement



The need

Scientific research provides an important input for sustainable management of biological resources. Scientific knowledge is central for rural, urban, industrial, and policy development, which will lead to improvement of people's livelihoods.

The mission

IFS shall contribute towards strengthening the capacity of developing countries to conduct relevant and high quality research on the sustainable management of biological resources. This will involve the study of physical, chemical, and biological processes, as well as relevant social and economic aspects, important in the conservation, production, and renewable utilisation of the natural resources base.

The strategy

IFS shall identify, through a careful selection process, promising young scientists from developing countries with potential to become future lead scientists and science leaders. They will receive support in their early careers to pursue high quality research in developing countries on problems relevant to the mission, which will help them to become established and recognised nationally and internationally. Additional supporting services will be provided to researchers in scientifically weaker institutions and countries.

IFS shall act in collaboration with Affiliated Organisations and other national, regional, and international institutions utilising the complementary strengths of such partnerships.



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