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For nearly twenty years, the West and Central African Council for Agricultural Research and Development (CORAF/WECARD) funded an expanding range of initiatives encouraging productive collaborations between science and agricultural productivity.

In February 2006, CORAF/WECARD organized a meeting of development partners—the first of its kind in the history of the Association. The main goal of this meeting was to establish a strategy for coherent and durable investment in agricultural research in West and Central Africa. In addition, the Association hoped to diversify its sources of funding and strengthen confidence-building relationships with its development partners. With this support, CORAF/WECARD will continue working towards the UN’s Millennium Development Goals (MDG).

Attendees of the CORAF/WECARD donors’ meeting succeeded in drafting a road map for strengthening agricultural research in West and Central Africa. The road map was refined by adhoc committees composed of CORAF/WECARD members, who met regularly throughout the year. Thanks to their efforts, the road map was adopted by the Governing Board (GB) and approved by the seventh ordinary session of the General Assembly (GA). The 7th GA met in April 2006 in Serekunda, Republic of the Gambia.

CORAF/WECARD took a methodical approach to revising its 1999-2014 Strategic Plan, an integral component of the road map. Through an economic analysis and Geographical Information System (GIS), it identified those agricultural commodities and research themes with the greatest potential for promoting economic growth in sub-region. After an outline of the research had been approved, a twelve-month calendar (June 2006 to May 2007) was established for the revision of the CORAF/WECARD Strategic Plan and its Operational Plan.

The following economic analysis, commissioned by CORAF/WECARD, the International Food Policy Research Institute (IFPRI), quantified the agricultural priorities of the sub-region capable of generating economic growth and poverty alleviation. The main results are summarized in the chapter titled “Zoom on the New CORAF/WECARD Strategic and Operational Plans”. As part of the planning process, two workshops were organized in 2006 to discuss priorities on agricultural research at the sub-regional scale.

2006 was also a year of transition for the Association. It marked the end of the Programme d’Appui à la Recherche Agricole en Afrique de l’Ouest (PARAO), financed by the European Union, and witnessed the mobilization of many resources. (PARAO, which represented CORAF/WECARD’s principal source of income between 2002 and 2005, officially ended in December 2005.) Despite the difficulties experienced getting PARAO off the ground, this funding program
permitted CORAF/WECARD to increase its institutional support and gain political recognition. CORAF/WECARD was also able to consolidate its position as a facilitator and coordinator of sub-regional agricultural research by engaging in large-scale projects, as attested by its final evaluation (September and October 2006). As a result of this new position, CORAF/WECARD signed an agreement with the Union Economique et Monétaire de l’Ouest Africain (UEMOA) in February 2006 to implement research programs related to its agricultural policy.

The development partners’ meeting, which took place earlier in the year, permitted the Executive Secretariat to mobilize sufficient funds to pay strategic planning costs, support existing programs, and establish new scientific collaborations.

Two chapters of this report, “Research Highlights” and “Advancement of Projects and Research Programmes”, contain useful information on the principal activities and initiatives of collaborations implemented in 2006.

To better coordinate research activities, the Executive Secretariat also enhanced its operational capacity throughout the year. We hired a coordinator for the new Cereal Network, a planning expert, and an expert in impact evaluation.

Following a tradition established in 2004, this report includes an introduction to the National Agricultural Research System (NARS) of one of our member states. This year, the honor goes to Ghana’s Council for Scientific and Industrial Research (CSIR).

Enjoy the report.

Dr Paco Sérémé
Executive Secretary of CORAF/WECARD
AN OVERVIEW OF 2006

Challenges, constraints and the way forward

In 2006, CORAF/WECARD pursued a wide range of activities: reinforcing cooperation, improving visibility, mobilizing new resources, advocacy, etc. Despite its undeniable successes, however, CORAF/WECARD must still confront a number of challenges. Notably, the institution must improve the functioning of its Governing Board and its technical advisory board.

The year 2006 was a period of intense activity for the Executive Secretariat (ES) of CORAF/WECARD, which also saw some very significant improvements. CORAF/WECARD enhanced cooperation in a number of domains, scientific and otherwise; it continued to encourage agricultural research in the sub-region of West and Central Africa, and it mobilized new financial resources. These advances made it positive for CORAF/WECARD to consolidate its role as a leading promoter of scientific cooperation.

2006 saw an increased number of scientific and non-scientific partnerships, all founded on rigorous standards of cooperation and coordination. This partnership was mobilized during the revisions of the CORAF/WECARD’s Strategic Plan, a process which began in June 2006 with a completion date of May 2007. The new Strategic Plan will have a ten year span from 2007 to 2016. It will also take into account the five-year Operational Plan which details implementation of the Comprehensive Africa Agricultural Development Programme (CAADP). In December 2005, the ECOWAS officially mandated CORAF/WECARD with the implementation of these plans. A similar cooperation agreement, signed in February 2006, links CORAF to UEMOA. In June 2006, the Executive Secretary tasked the International Food Policy Research Institute (IFPRI) with an economic analysis to determine research priorities in West and Central Africa.

A 6.8% growth rate

Revision of CORAF/WECARD’s Strategic Plan will be based on quantifiable economic priorities. The Secretariat also commissioned the IDLgroup to provide necessary technical assistance in facilitating the revision of the Plan and preparations of the West Africa Agricultural Productivity Programme (WAAPP) and the Central Africa Agricultural Productivity Programme (CAAPP).

The IFPRI study was completed in October 2006 (a summary of their findings can be found on page 15. According to the report, improving the performance of the agriculture sector in West Africa faces a number of challenges. With an eye towards achieving MDG number one (“eradicate extreme poverty and hunger”), however, its
conclusions and strategic recommendations imply that the task is hardly impossible. To do so, the region must attain an annual average growth rate of 6.8% (it being understood that the actual situation may vary greatly from one country to the other). Certain countries, notably Ghana, are already well on their way to achieving MDG number one in light of their current growth rates.

It is possible to achieve the required growth rate in the agricultural industry, provided its potential for increased productivity can be fully realized. Most countries record agricultural growth rates above 5%, and about half (nine countries) have growth rates above 6%.

In consequence, the IFPRI study recommends that West and Central African governments invest in a number of measures to further accelerate growth. In particular, they should stimulate productivity by (1) emphasizing those sub-sectors with a strong demand in West Africa, (2) reinforcing regional agricultural markets and commodity exchanges, and (3) continuing to work towards economic integration.

The implementation of the Sub-Saharan Africa Challenge Programme (SSA-CP) follows a successful selection of projects for three zones in the Kano-Katsima-Maradi Pilot Learning Site (PLS). The European Commission, one of the program’s inception phase’s principal financial supporters, and the Science Council of the Consultative Group for International Agricultural Research (CGIAR), have reviewed this process. Both reviews were positive, providing many useful suggestions and recommendations. The next phase (ie implementation phase) is being scheduled for early 2007.

The action plan for development of biotechnology and biosecurity in ECOWAS countries, following recommendations of the June 2005 ministerial conference, was brought to completion in March 2006. Its principle objective, in line with ECOWAS policy, was to make long-term contributions to food security, economic and social development, and the reduction of poverty in member nations. The operational objectives of the plan included increasing agricultural productivity.
In April 2006 the ES, in collaboration with CORAF/WECARD’s Scientific and Technical Committee (STC), defined terms of reference and launched a medium-term evaluation of 12 ongoing competitive projects. The exercise began in September, and was completed in early October 2006. Its principle objective was to create a progress report for the various projects in light of their respective schedules. Based on these reports, the ES could determine which projects might need a change in orientation to achieve their stated goals.

The elaboration of the CGIAR Medium-Term Plan (MTP) began on 2 May 2006, based on that organization’s priorities for the period 2005-2015. Ten CGIAR centers (WARDA, IITA, ICRISAT, ILRI, IWMI, ICRAF, IPGRI, CIAT, CIFOR, and IFPRI) took part in this exercise. Their first general meeting, which several regional NARS and CORAF/WECARD also attended, was held in October 2005. Since that date, additional consultations have been held at Dakar (March 2006), Nairobi (June 2006), and Cotonou (November 2006). These meetings resulted in a logical refinement of CGIAR’s global stance towards West and Central Africa.

Following the establishment of a formal partnership with the African Agricultural Technology Foundation (AATF), signed in October 2006, CORAF/WECARD was involved in the Foundation strategic planning. The formal protocol between the two institutions should open the way to direct collaboration in 2007. This includes the involvement of AATF in the preparation of CORAF/WECARD Operational Plan.

Research results

In 2006, research results relevant to the sub-region were codified in a new database. In this context CORAF/WECARD department of Information and Communication established some new initiatives. This includes new functions, for example distance training (the first session, which took place between August 2005 and January 2006, had 987 participants). Given the great interest generated by this initiative, notably among FARA (Forum for Agricultural Research in...
In 2006, research results relevant to the sub-region were codified in a new database.

Africa) members, the Forum has committed to repeating the experiment on a continental scale. To this end, CORAF/WECARD, FARA, and ZADI (the technical partner) have initiated discussions on mounting a second long-distance training session.

Another initiative is linked to the creation of new PHProjekt groups, in addition to the 21 national groups that now bring together various NARS participants. Several new groups have been established, notably two in the context of DPSAR—i.e., a steering group of the CORAF/WECARD-PLAN and another group for the financial partners (CORAF/WECARD-FP-R). A demonstration of this PHProjekt platform was made at the strategic workshop for defining new research priorities on 14–15 November 2006 in Saly Portudal, Senegal.

As a result of this demonstration, several NARS participants expressed interest in joining the system. This should translate into a substantial increase in the number of registered users, which had grown to 1,497 by 16 November 2006. In addition, this interest was noted by certain financial partners and CGIAR centers. The PHProjekt platform will play an essential role in the exchange and dissemination of information resources, as well as promoting communication among various players during and after development of the WAAPP and CAAPP.

Publication

After the appearance of two issues in 2005, the organization’s scientific review could not be continued due to financial constraints (CORAF/WECARD did not succeed in mobilizing resources earmarked for this purpose). For the same reasons, publication could not continue in 2006. Measures are currently being taken to relaunch and strengthen the review.

Issues 36, 37, and 38 of the Coraf Action information bulletin, have been published and disseminated over the Internet. Surface mail distribution has been suspended temporarily for logistic reasons. The back-logs of unpublished numbers is being gradually reduced. It is hoped that the situation should be normalized with No 40 which is expected in January 2006.
(IAALD) was also established during this event. CORAF/WECARD’s manager of information and communication was chosen to occupy the post of vice-president for this new association, further improving CORAF/WECARD’s positioning and visibility on the regional and international levels.

In addition, a number of activities were conducted with the purpose of enhancing CORAF/WECARD’s visibility. This included a new institutional flyer, that was produced. Information on CORAF/WECARD was disseminated via several media (radio, television, newspapers) on the national, sub-regional, and international levels. A lighted sign and column were constructed in front of the Executive Secretariat, and a wide variety of information was made available on the Internet.

The web site was updated regularly and used to launch several job searches during the period under review (program assistant, accounting manager, planner, impact evaluator, biotechnology coordinator, Cereal Network coordinator). It was also used to release news concerning the institution and issues of Coraf Action, alleviating the difficulties with surface mail distribution.

Mobilisation of resources

As for agricultural research advocacy, this was accomplished through bilateral talks with regional economic communities (REC), intergovernmental organisations related to agriculture, and financial partners, and also by sending CORAF/WECARD representatives out on assignment.

Lobbying activities to mobilize financial resources took place at the beginning of the year during a CORAF/WECARD’s donors’ meeting. Funding obtained during the second quarter was mostly directed towards revision of the Strategic Plan, and for the development of WAAPP and CAAPP. These programs, described in the CAADP, respect the principles laid out in the Framework for Africa Agriculture Productivity (FAAP). They will be the basis of efforts to mobilize financial resources for agricultural research in West and Central Africa over the next few years.

A total of 1,424,846 dollars (USD) was granted CORAF/WECARD by the United Kingdom’s
Department for International Development (DFID) to finance the revision of the Strategic Plan and support development of the Operational Plan.

The World Bank (WB) has also financed preparations for WAAPP, to the tune of 748,500 USD. This subsidy agreement was signed by the WB and ECOWAS in September 2005.

The USAID granted 901,751 USD to support CORAF/WECARD’s institutional developments, permitting the launch of Cereals Network activities, and the creation of a biotechnology coordination unit. USAID also supported aspects of the preparations for revising the Strategic Plan and further development of the productivities programmes (WAAPP and CAAPP).

FARA, for its part, signed a letter of agreement with CORAF/WECARD in October 2006 to implement the pilot phase of the SSA-CP at the Kano/Katsine/Maradi site. It will provide 60,000 USD.

The IDRC provided CORAF/WECARD 23,000 USD to organize a workshop on reconstruction and rehabilitation of national systems emerging from armed conflicts.

Despite reminders sent in March and April 2006, only two countries paid their dues. Togo, through the Togolese Institute of Agricultural Research, has supplied 500,000 FCFA—half of its annual contribution. The Côte d’Ivoire paid its dues for 2005 and 2006 (2,000,000 FCFA), and prepaid the same amount for its 2007 contributions.

This low rate of payment deserves the close attention of the Governing Board. The situation indicates a lack of conformity with CORAF/WECARD bylaws, and a low level of appropriation by its members.

The firm BDO/MBA performed the annual audit of CORAF/WECARD for the 2005 fiscal year in June 2006. Its report, received October 2006, endorses the 2005 accounts without reservation.

In summary, the projects begun during the first quarter of 2006 and consolidated during the second quarter permitted CORAF/WECARD to anticipate successful sub-regional cooperation on Pillar IV of the CAADP.

The Executive Secretariat grew in capacity as well. December 2006 saw the arrival of the Cereal Network coordinator; in January 2007 we welcomed a planning expert and an expert in impact evaluation. The recruitment of a regional biotechnology coordinator and an internal auditor are planned for early 2007. With these new staff, the Executive Secretariat is better equipped to handle the continuing challenges faced by the Association.

Despite these improvements, however, it is clear that changes in the Governing Board and the Scientific and Technical Committee are also required if CORAF/WECARD members are to participate more fully in the Association.
FISCAL YEAR 2006
AUDIT AND CERTIFICATION OF CORAF/WECARD

Accounts for the 2006 fiscal year, from 1 January to 31 December, were audited and certified on 21 August 2007 by the accounting firm BDO/MBA located in Dakar, Senegal.
### CORAF/WECARD in 2006

**CORAF/WECARD EXECUTIVE SECRETARIAT**

**INCOME STATEMENTS**

(in thousands of FCFA)

<table>
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<tr>
<th>Sources of Funding</th>
<th>2006 certified accounts</th>
<th>2005 certified accounts</th>
<th>2004 certified accounts</th>
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<td>Operational subsidies</td>
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<td>NARS contribution</td>
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<td>Other products</td>
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<th>Expenses</th>
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<th>2004 certified accounts</th>
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<tr>
<td>Fixed infrastructure costs</td>
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<td>Other operating costs</td>
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<td>Statutory meetings</td>
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<td>Specific and professional activities</td>
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<td>Investments</td>
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<td>Depreciation and provisions</td>
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<td>37,976</td>
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<td><strong>Total expenses</strong></td>
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<td><strong>529,218</strong></td>
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<td><strong>Result</strong></td>
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<td><strong>12,486</strong></td>
<td><strong>272,248</strong></td>
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</table>
CORAF/WECARD in 2006

IFPRI STUDY

Alternative strategies for agricultural growth

A study conducted by IFPRI, commissioned by CORAF/WECARD, and funded by DFID and USAID has demonstrated the possibility of West and Central African countries attaining the MDG number 1. The IFPRI study titled “Alternative regional strategies for agricultural growth and the reduction of poverty in West Africa”, lays out the agricultural priorities for generating economic growth and reducing poverty in West Africa.

The study suggests that although improving the performance of the agricultural sector will be challenging, it remains possible to achieve the first MDG. For this to happen, West Africa must attain an average annual growth rate of 6.8%. The growth rates of individual countries may vary widely around this average (see the graphic below). Certain countries, such as Ghana, are already well on their way to achieving the goal.

All said and done, the IFPRI study claims that it is possible to stimulate an adequate growth rate in West Africa if the region’s potential is fully realized.

The study identifies several alternative strategies for working on these agricultural priorities, which are of interest to West and Central Africa on all levels. At the same time, the study defines a context in which organizations such as CORAF/WECARD, the CEDEAO, and their partners can position their own strategies and action plans.

Rice and livestock

The results of their analysis reveal that rice seems to have the greatest potential for growth, so this crop is likely to generate the most important benefits for several countries.

Livestock may be another important option for accelerating growth; if this sector attains the same level, it could contribute even more to the Sahel’s agricultural growth.
There has been little improvement in cotton fertilizers since their introduction in the 1970s, a fact that has pushed Togo, Mali, Burkina Faso, and Benin to push for updated formulas. To this end, CORAF/WECARD has supported research on a more modern approach to fertilizing ferruginous tropical soils.

The objective is to improve cotton production in the aforementioned countries. This urgent and necessary research hopes to provide African cotton growers with formulas containing more potassium and magnesium but less phosphorus. Such fertilizers would permit a more intense cultivation of cotton.

The first stage of this research investigated nutrient deficiencies in the foliage. Conducted in Mali during 2004 and 2005, then in Burkina Faso, Togo, and Benin in 2005, this research was able to uncover the main shortcomings of fertilizers being used at the time. Phosphorus was rare if not absent, and potassium and magnesium were deficient. New formulas were thus needed that reversed this trend.

Armed with these results, researchers approached three companies in the business of developing and manufacturing fertilizers. To respond to the problem, they proposed new formulas “tested under various agro-climatic conditions, in order to provide solutions that are agronomically and economically acceptable to all parties.”

The results of the 2004 mineral deficiency study (conducted by visual inspection) were confirmed in 2005. The researchers did not observe a phosphorus deficiency, and the nitrogen deficiency was weak. They did, however, obtain clear confirmation of previous results on potassium and magnesium.

Objective: to improve cotton plant production in Benin, Burkina Faso, Mali, and Togo.
RICE IN BURKINA FASO
A study on consumer preferences

In Burkina Faso, researchers at the Institut national des études et de recherches agricoles (INERA) tested new strains of rice in the plains (both intra- and interspecies hybrids). A study led by Dr. Kadietou Zida and her team determined the characteristics and breeds preferred by consumers in the cities of Ouagadougou and Bobo Dioulasso.

Titled “Evaluation of rice varieties obtained by intra- and inter-species crossbreeding”, the study investigated 18 varieties supplied through an INERA/WARDA collaboration on rice production, and 19 types of rice collected directly from consumers in the two cities.

The main objective of this study was to evaluate consumer preferences with respect to new cultivation methods then being tested in collaboration with ROCARIZ (West and Central African Rice Research and Development Network) while taking into account those varieties already being cultivated and available on the market. The study also determined the physico-chemical, organic, and culinary characteristics of the new varieties.

Reversing the importation trends

The study was carried out by means of questionnaires. In Ouagadougou, 353 heads of household, 125 restaurant managers, and 75 distributors responded. In Bobo Dioulasso, 318 heads of household, 103 restaurant managers, and 53 distributors participated in the study.

Rice plays an essential role in the culinary habits of the Burkinabè. In this country, local efforts to increase production in recent years are matched by a firm intention to reverse the trend of rice importation.

Researchers in this domain are convinced that in order to make local rice production more competitive, it is first necessary to understand the physico-chemical properties that have a direct effect on cooking and taste. For this reason their work can be included among CORAF’s key research programs and themes, and even extended to other rice crops.

MAIZE
Working against Striga, drought, and the declining fertility soils

The West and Central Africa Collaborative Maize Research Network (WECAMAN), financed by the Nippon Foundation, is pursuing activities in 11 countries: Benin, Burkina Faso, Cameroon, Côte d’Ivoire, Ghana, Guinea, Mali, Nigeria, Senegal, Chad, and Togo. The ONG SG 2000 is also involved.

The objective of WECAMAN is to assist national maize programs in West and Central Africa in exploiting their resources and overcoming constraints common to the sub-region. Specifically, it achieves this through the development and transfer of appropriate durable technologies.

Currently planned activities include tests and demonstrations of agricultural techniques, community production of seed corn, regional trials, increased production of seed, and ensuring stability of variety. Related activities include promoting market demand for maize and increasing the capacity of national corn programs to develop and transfer technologies.

High resistance

WECAMAN had set objectives to be completed during the period from 1 October 2005 to 30 September 2006, and has made significant progress. Communities aided by the program produced approximately 320 tons of commercial seed, 35 tons of seedling beds, and 6 tons of seed for growing short-term and very short-term varieties. In addition, 339 farmers and producers were trained in the production of seed.

Through field tests and other research activities led by the program in 2006, a total of 1,574 kg of seeds was produced by the various NARS of West and Central Africa, both QPM (quality protein maize) and “endosperm” varieties with high resistance to MSV (maize streak virus).

With respect to maize cultivation, WECAMAN stresses the combat against Striga, drought, and the decline of fertility in soils.
It is important to promote and conserve sustainable genetic resources.

PLANT GENETIC RESOURCES
A regional strategy for better management

Several international research organisations recognize the importance of promoting and conserving sustainable genetic resources. The well-being of present and future generations depends on this aspect of agricultural development.

A regional strategy for managing the genetic resources of plants in West and Central Africa was devised by a collaboration led by CORAF/WECARD. In February 1998, this work led to the establishment of the Genetic Resources Network for West and Central Africa (GRENEWECA), which covers 22 countries.

The essential mission of this network is to encourage conservation and more varied utilisation of plant genetic resources, while developing awareness of their importance.

It also tasks itself with encouraging and realising activities related to improving the management of genetic resources in West and Central Africa, with an eye towards eradicating poverty, improving food security, and protecting the environment.

GRENEWECA also emphasizes the importance of conserving genetic resources in individual countries of the sub-region. It is helping national programs implement the following international laws and conventions: the Convention on Biological Diversity (CBD), the GPA, and the International Treaty on Plant Genetic Resources for Food and Agriculture.

To help GRENEWECA achieve its objectives, CORAF/WECARD organized a series of regional conferences. The first took place in Ibadan, Nigeria, from 26 to 30 April 2004, and produced some solid recommendations that certainly deserve further investigation: better regional collaboration, and establishing an “Excellence Centre” node. The latter is a regional cooperation mechanism, which in this case would be used to share the responsibilities of plant genetics resource management.
SORGHUM
Betting on high-yield varieties

The West and Central African Sorghum Research Network (WCASRN) is financed by USAID. Since October 2006, it has been operated by the NARS of six countries (Burkina Faso, Mali, Niger, Nigeria, Senegal, and Togo) as well as ICRISAT.

Its objectives are twofold: to document and up-scale prior research in the domain of sorghum cultivation, and to identify those varieties with superior yield or which are better adapted to the Sudan/Sahel zones of West Africa. It also works towards improved communication, technology exchange, and reinforcing the capacities of member countries.

Among other activities, the network published a report in English and French on its activities and several technological guides. It also ran several field trials of new sorghum hybrids. The Network conducted workshops for the seed industry on writing business plans and coordinating with other companies.

Higher yields

In partnership with ICRISAT, the NARS of participating countries began to test the first experimental sorghum hybrids. Each hybrid was tested between 12 and 55 times in the field, both in the Northern Sudan Zone (Bambey, Senegal and Saria, Burkina Faso) and Southern Sudan Zone (Bengou, Niger; Sinthiou, Senegal; Sotuba, Mali; and Icrisat Samanko, Mali). In the latter case, the experiment was conducted during two growing periods. Another experiment was conducted in the Samaru zone of Nigeria.

The best hybrids yielded from 17% to 58% more than the local average, corresponding to between 0.3 and 0.9 extra tons. These high-yield sorghum hybrids are capable of creating a significant surplus for commercial planters and seed distributors in the sub-region.

Sorghum cultivation. The experiments of ROCARS have led to markedly superior yields.
IFAD (the International Fund for Agricultural Development) financed a research/development project titled “Improving Livelihoods in rural Central and West Africa through competitive and productive yam cultivation systems”. This program was carried out by several partners in six countries: Benin, Cameroon, Côte d’Ivoire, Ghana, Nigeria, and Togo.

As the title implies, the main goal of this project is to help yam producers, merchants, and consumers. Its approach is to increase the supply and demand of yams simultaneously.

Strengthening capacity for research

The project consists of several activities, which can be divided into eight main initiatives. Of particular importance are the development, validation, and promotion of technologies that can increase productivity. Once these tasks are accomplished, rapid propagation of those technologies should follow. Furthermore, it is important to achieve a better understanding of the market and demand for yams. The promotion and development of new yam-based products are also major themes of the project.

The partners also intend to reinforce their capacity for research and development, as well as popularizing and diffusing information related to yam cultivation technologies.

This project has been on track since it was launched, and in 2006 continues to progress nicely. A total of 51 research and development activities have been carried out in the six countries.

YAMS

Improving livelihoods through competitive production systems

IFAD (the International Fund for Agricultural Development) financed a research/development project titled “Improving Livelihoods in rural Central and West Africa through competitive and productive yam cultivation systems”. This program was carried out by several partners in six countries: Benin, Cameroon, Côte d’Ivoire, Ghana, Nigeria, and Togo.

As the title implies, the main goal of this project is to help yam producers, merchants, and consumers. Its approach is to increase the supply and demand of yams simultaneously.

Technology adoption

The results of this project were satisfying. In Côte d’Ivoire, for example, the women who worked with the project organized themselves into producers’ association. Each site saw an increase in the use of the legume Cajanus cajan (pigeon pea) for food and food security. In Ghana, the results of the program show that when pigeon peas were grown for food the net income of the community increased by 57%. In Togo, adopting new vegetable cultivation technologies increased income by more than 50%. In addition, investing in compost for vegetable production increased revenues by one million CFA francs per farmer and per hectare.
EXTENDING THE SCOPE OF PRASAC

A participative approach for new regional themes

PRASAC (Center for Applied Research on Savannah Development in Central Africa) was able to extend its activities to other ecological zones with the participation of all CEMAC member nations as well certain regional and international partners. The activities of PRASAC in 2006-2007 are organized around two objectives: pursuing the ARDESAC project, and extending PRASAC to other regional milieux.

The first objective is related to an agreement signed in July 2004 between CEMAC and the French minister of foreign affairs. ARDESAC consists of 13 programs being carried out in Cameroon, the Republic of Central Africa, and Chad. Its goals are to educate those in charge of reducing poverty and improving food security in the cities and countryside, and to encourage sustainable development with respect to natural resources.

Specifically, the project aims to reinforce its capacity for research, regional collaborations, and its partnerships with international scientific institutions.

Increasing research capacity

ARDESAC is working to encourage development research, as well as accompany and support the use of scientific, technical, and socio-economic data in the form of information systems.

ARDESAC is pursuing and multiplying its efforts to refine, test, and transfer pertinent innovations. It is responding to the big questions on sustainable management of pastoral, arable, and forested lands; of protected spaces; and of their natural resources, biodiversity, and fertility. The project’s 13 projects are organized into three themes:

- management of land, natural resources, and the environment;
- decision support for production systems and exploitation; and
- product pricing and the organization of distribution channels.

Ten high-priority programs

Since the program started, several actions have been taken to increase its capacity. Researchers involved in its projects have benefited from certification programs, specialized training, and the acquisition of new equipment.

The last portion of financing, due in June 2008, will be used to cover expenses from July 2008 to June 2008. During the first quarter of 2009, an international conference is being planned that should provide an occasion to synthesize the project’s work.

The extension of PRASAC activities to other ecological zones in the CEMAC is taking place with the participation of all member nations as well certain regional and international partners. This extension is driven by sessions of the annual conference of Central African university presidents and research directors (CRUROR/AC). During the October 2006 conference, held in Douala (Cameroon), 60 researchers attended from the community’s six countries and associated regional and international partners. Together they identified ten high-priority
regional programs, and crafted a presentation that will be widely distributed to attract additional collaborators. This process is meant to be ongoing; any new proposals for high-priority programs will be recorded and considered for the following year’s release.

**Cartography of actors and markets**

Four principal “production basins”, covering 141 villages, have been identified in the PRASAC zone of Cameroon. Despite the high overall diversity of fruit production (about eleven species), the individual production basins are highly specialized: speculations in mango and avocado prevail in the Adamaoua, while mango, citrus, and guava dominate the North and extreme North.

Similar results have been obtained in Chad. This phase of the research (identifying production basins) should be completed by an analysis of distribution channels, to learn the relationships linking production zones to principal consumer centers.

All the countries in the PRASAC zone have regions where agro-ecological conditions are favorable for cultivating a wide variety of fruits. The cumulative production of fruits and vegetables in Cameroon, the Central African Republic, and Chad grew from 2.45 million tons in 1979 to 4.03 million tons in 2003 (FAOSTAT, 2007).

Despite the availability of fruit farms, annual fruit consumption per capita remains low. For example, in Cameroon the average person eats 19 kg per year while the FAO recommends 70 kg per year for better nutrition (Temple, 2001). In the Central Africa Zone, most studies on fruits focus on its economic aspects, production, or the technological enhancement of distribution channels (Kameni and Layla, 2002; Sorto, 2003). There is a general lack of awareness that the distribution of fruit-growing regions is evolving along with the savannahs of Central Africa. This fact justified the creation of two ARDESAC research programs: *Les filières fruitières dans les nouvelles dynamiques de restructuration agricole* and *Stratégies d’amélioration des systèmes de production fruitière et maraîchère en zone de savane d’Afrique*. These two programs have certain objectives in common, including the identification and mapping of production basins, actors, and fruit markets in the Central African savannahs.
In 2006 CERAAS (Centre d’Etude Régional pour l’Amélioration de l’Adaptation à la Sécheresse) a CORAF/WECARD base centre, based in Thiès, Senegal, carried out a program of activities associated with high-priority research topics. In particular, its goals are to characterize (1) the cultural response to drought and improvements in selection methods; (2) improvements in methods for predicting agricultural production; and (3) changes in cultural systems as they adapt to the drought.

CERAAS is fully involved in research on these topics, conducting more than ten activities in 2006. One notable project, financed by SAED (Société Nationale d’Aménagement et d’Exploitation des Terres du Delta du Fleuve Sénégal, des Vallées du Fleuve Sénégal, et de la Falémé), characterized the agro-morphological behavior of sesame (Sesamum indicum L.) under irrigated conditions in the Senegal River valley. The objective of this research, carried out in partnership with Dakar’s Cheikh Anta Diop University and the Mushroom Biotechnology Laboratory, is to contribute to the fight against poverty by improving food security and nutrition as well as augmenting the income of rural populations. More specifically, it aims to increase national sesame production for export and local consumption. The work consisted of educating users on appropriate agricultural techniques, identifying those varieties best suited to irrigated agriculture, and finalizing the map of sesame varieties currently cultivated in Senegal.

Contributing to the fight against poverty

Thanks to its reliance on field observations and data, this research has revealed satisfying agro-morphological behavior among the sesame varieties cultivated along the Senegal River Valley. According to variety, the maximum height of the plant ranges between 120 and 200 cm; the number of branches between 5 and 16, the number of capsules per plant between 64 and 113, the weight of 1000 seeds between 2.1 and 3.3 g, and the yield between 1,600 and 2,200 kg per hectare. Note that this work also completed the map of sesame varieties cultivated in Senegal, contributing especially in the Northern regions.

In one way or another, all the research carried out by CERAAS teams contributed to the fight against poverty by improving crop yields and overall production. In this context, another noteworthy project is “The production of...
CIRDES

Diversifying its research domains

CIRDES (Centre International de Recherche-Développement sur l’Elevage en Zone Sub-Humide) is a sub-regional research institution devoted to livestock development in the sub-humid zones of West and Central Africa. Its activities are directed towards improving the health of livestock, increasing milk and meat production to satisfy the growing needs of the population, and reducing poverty in member countries by enhancing agricultural revenues.

CIRDES’ research activities in 2006 attest to its ability to adapt to the demands of governing bodies as well as those of its partners.

The Programme conjoint de recherche sur l’élevage en Afrique de l’Ouest (PROCORDEL), which has now come to an end, helped CIRDES diversify its research domains and strengthen its programs in socio-economics and animal production. Vectorial diseases remain an important topic, including fundamental biological research and studies taking into account environmental and socio-economic factors.

Recruiting students

In response to the wishes of its partners, CIRDES increased its informational activities in 2006. In addition to organizing training workshops and public information sessions, it tried to pass on certain laboratory techniques. It is growing more common to train future researchers by allowing students to participate in research, and the number of graduate students in the program is increasing.

Early in 2006, CIRDES implemented two projects financed by FSP Burkina No 2002-87—one on the genetics of small ruminants in Burkina Faso, and the other on sustainable management of sylvopastoral resources and hay production.

Other projects are in full swing, recruiting several students and commencing field activities. This is the case for the Welcome Trust, CORAF/ADB/01 (information sharing and technology transfer), FONIO, CORAF/Dairy policy, and DURAS. The project to obtain support for UEMOA “centers of excellence” is also underway. The president of the
UEMOA Commission and the Director-General of CIRDES have signed a financing agreement, and the first transfer of funds took place in mid-2006.

Developing centres of excellence

2006 also marked the end of the Gestion des Insectes Ravageurs du Cotonnier (GeRiCo) project (“Management of Cotton-Ravaging Insects”). The project brought new skills to CIRDES laboratories, and also improved the selection of molecular biology equipment available to URBIO (“Biology Research Unit”). A project on chemoresistance management, coordinated by ILRI and financed by the BMZ, was granted additional funding in recognition of its results.

CIRDES took several actions in 2006 to strengthen its research teams, reinforce research partnerships with other institutions, and develop its centres of excellence. In the field of genetics, for example, a researcher/lecturer at Burkina Faso’s Bobo Dioulasso University joined URBIO. An INERA entomologist and former director of the Ecole de Lutte Anti-Tsetse (ELAT) joined the Center’s communication and training group. He will also participate in research at URBIO.

Collaborations are growing

The arrival and installation of a team from the IRD’s Mixed Research Unit (MRU), two researchers and a graduate student, further strengthened the Center’s research activities and allowed it to intervene at more sites. MRU 17 or 177 is mainly working on sleeping sickness and its vectors, principally the tsetse fly.

The recruitment of these researchers from partner institutions addresses one of the recommendations to issue from the workshop that re-examined the Strategic Plan. In addition to reversing CIRDES’ previous trend of diminishing research capacity, collaborations are growing more common. The list of partner institutions involved in new projects submitted during 2006 attests to this improvement; the CORUS (Coopération par la Recherche Universitaire et Scientifique) projects are a prime example.

Finally, note that the IRD/CIRDES team led a number of field experiences in Guinea. Two researchers have been officially recognized as “research leaders” by CAMES (Conseil Africain et Malgache de l’Enseignement Supérieur) in 2006: Mamadou Sangaré of the Animal Production Research Unit (URPAN) and Augustin Bancé of CCFOR.

Technology transfer and public outreach

Throughout 2006, scientific and technical information was widely shared through a program of national workshops and formal technology transfer between laboratories. These activities were organized by the CORAF/ADB/01 project.

Technology transfer took place between the national laboratories of Benin (Benin National Veterinary Laboratory), Burkina Faso (INERA; the ELISA technique was shared with Ouagadougou’s National Husbandry Laboratory), Mali (the ELISA technique was shared with the Bamako Central Veterinary Laboratory), and Ghana (training in the ELISA technique, technology transfer to the Tsetse and Trypanosomiasis Control Unit in Pong-Tamale).

Techniques of molecular genetics and cytogenetics were also shared with the Bohicon National Veterinary Laboratory in Benin and INERA in Ouagadougou, Burkina Faso. The objectives of this last technology transfer were to characterize the races through various biological tests and to identify genetic factors harmful to production.

Laboratory training programs alternated theoretical and practical sessions. The informational workshops, conducted in Ghana, Burkina Faso, Benin, and Togo, spoke to the public about improving animal production in more general terms.
CARBAP, a precious tool for regional cooperation

Overall, 2006 was a positive year for CARBAP (African Center for Research on Bananas and Plantains). Based in Njombé, Cameroon, the Center found itself occupying an increasingly privileged position in regional work on banana and plantain productivity in West and Central Africa.

CARBAP had a full calendar in 2006. On the regional scale, one of its most remarkable successes was its selection as a CORAF/WECARD base centre, confirming its regional mandate. It is also noteworthy that CARBAP co-organized the annual MUSACO meeting in Cameroon (MUSACO is the Réseau Régional pour l'amélioration de la recherche et du développement de la banane et de la banane plantain en Afrique Centrale et Occidentale). CARBAP participated in a meeting to study strategies for managing genetic resources at the regional level, organized by Biodiversity International and CORAF/WECARD.

With respect to international cooperation, CARBAP strengthened its position within INIBAP (International Network for the Improvement of Banana and Plantain) by hosting two important meetings in Cameroon (one to launch the Harvest Plus project, the other to establish the Musa Taxonomy Advisory Group). Several collaborations were also initiated or continued in 2006, especially within the DURAS, CORAS, and Challenge Program initiatives. In addition, CARBAP researchers participated in several international conferences.

Ten millions plants produced

In Cameroon, CARBAP reinforced its relations with the Ministry for Scientific Research and Innovation, the Ministry of Agriculture and Rural Development, and the Institute for Agricultural Research for Development (specifically, the Projet d’Appui à la Recherche Agricole au Cameroun and the Programme de Relance Economique de la Filière Banane Plantain au Cameroun).

The PIF technique (seedlings from stem fragments) technique, an innovation of CARBAP, has been widely adopted in recent years to meet the ever-increasing demand for healthy plantations. PIF permits the large-scale horticulture of high-quality banana and plantain seedlings in vivo. It has been the subject of numerous national training programs in Africa and throughout the world. Fifteen African countries have greatly benefited from the technique: Cameroon, Gabon, Central African Republic, Republic of the Congo, Democratic Republic of the Congo, Togo, Benin, Nigeria, Côte d’Ivoire, Guinea, Ghana, Equatorial Guinea, Mali, Senegal, and Burundi. Haiti, New Caledonia, and Colombia also make use of it.

In Cameroon, for example, farmers adopting PIF have created more than 300 nurseries; the cultivation of seedlings via the technique has even emerged as a career. PIF nurseries have been installed in rural and peri-urban regions by Common Initiative Groups (CIG), as well as by farmers and other individuals trained directly by CARBAP. Nearly ten million plants have been produced using PIF in Cameroon between 2004 and 2006.

Since 2003, CARBAP’s Post Harvest Technology Program has also been deeply involved in a collaboration evaluating bananas and plantains as a potential source of micronutrients.

Despite the good results obtained in 2006, it is important to emphasize that CARBAP also had to overcome certain difficulties associated with a lack of financial resources. There were not enough funds to maintain infrastructure, buy more mobile equipment, or renew large laboratory equipment. Increased financial support would permit CARBAP to attract more qualified personnel, ensure that its researchers remain highly motivated, and strengthen the capacity of sub-regional NARS. A major preoccupation of CARBAP’s steering committee is consolidating the Center’s legal status, to obtain a guaranteed source of annual funding from the government. Finding a remedy for its financial difficulties will be a major challenge for the next two years.
The WECAMAN Project
Title: West and Central Africa Collaborative Maize Research Network (WECAMAN).
Objective: To assist West and Central African national rice-growing programs in pooling resources and overcoming production constraints common to countries in the sub-region.
Donor: Nippon Foundation.
Partners: Benin, Burkina Faso, Cameroon, Côte d’Ivoire, Ghana, Guinea, Mali, Nigeria, Senegal, Tchad, Togo.
Activities in 2006: Tests, communal seed production, regional trials, increasing and maintaining seed variety, stimulating demand by encouraging maize consumption and improving markets, increasing the rate of technology transfer from national maize programs.

The WCASRN Project
Title: West and Central African Sorghum Research Network (WCASRN).
Objective: To augment the productivity and utilization of sorghum.
Donor: USAID.
Activities in 2006: Documenting and popularizing the activities of preceding networks, production of technical guides on the preparation of promising sorghum-based products, evaluation of the productivity of sorghum hybrids, organization of a workshop on drafting business plans directed at grain-transforming businesses.

Improving livelihoods in rural West and Central Africa
Title: Improving livelihoods in rural West and Central Africa.
Objective: To improve the standard of living for producers, processors, merchants, distributors, and consumers of yam products. Certain activities also seek to increase the productivity and utilization of sorghum.
Donors: IFAD, IITA, NARS.
Partners: Benin, Cameroon, Côte d’Ivoire, Ghana, Nigeria, Togo.
Activities in 2006: A new program, several action plans were created in 2006 for activities to be realized in 2007. More than 50 research and development activities were implemented by selected teams in the six participating countries.

The Crop-Livestock Project
Title: Crop-livestock integration for sustainable natural resources management in the sub-humid and highland zones of West and Central Africa.
Objective: To integrate and improve the use of livestock waste in semi-humid and mountainous regions of West and Central Africa, thereby promoting the durable management of natural resources. To increase the productivity and sustainability of integrated harvesting systems so that small producers can contribute to food security, poverty reduction, and protecting the ecosystem.
Donors: CRDI, ILRI.
Partners: Cameroon, Côte d’Ivoire, Ghana and Togo.

The ARDESAC Project
Title: Appui à la recherche régionale pour le développement durable des savanes d’Afrique centrale (ARDASCAC).
Objective: Improve the skills of decision-makers and researchers in charge of reducing poverty and improving the food security, in both cities and the countryside, while encouraging the sustainable exploitation of natural resources.
Donors: French Ministry of Foreign Affairs, CEMAC, partner nations (Cameroon, Chad, Central African Republic)
Partners: IRAD, Ngaoundéré University, Dschang University (Cameroon); ICRA, Bangui University (Republic of Central Africa); ITRAD, LRVZ, N’Djaména University (Chad); CIRAD, IRD (France), Leyde University (Netherlands); several French Universities (Paris, Toulouse, Rennes, etc.)
Activities in 2006: Continued collection and analysis of terrain data. 13 individual programs were implemented, which can be grouped into three main activities: (a) management of space, natural resources, and the environment; (b) decision support for the exploitation of production systems; and (c) product pricing and organizing distribution channels. The project also plans to improve and increase the capacity of the scientific environment.
Broad economics trends

With 22.5 million inhabitants and an annual growth rate estimated at 3%, Ghana has achieved notable successes in reducing poverty. Most social indicators show real progress between 1997 and 2003, the year of the most recent national survey. Poverty remains a very real problem, however, especially in rural zones; half the population lives on less than a dollar per day. In terms of Gross National Product (GNP), economic growth regularly exceeded population growth. The per capita income, estimated at 320 USD in 2000, was 450 USD in 2005.

Agriculture is the jewel of Ghana’s economy, representing more than 40% of exports and about 38% of the GNP. It is the principal livelihood of about 60% of the population. The mining sector accounts for less than 5% of the GNP, but represents about 30% of exports.

The industrial sector, essentially focused on the transformation of wood and agricultural products, accounts for less than 9% of the GNP. The service sector (not counting construction), on the other hand, contributes nearly 29%. The fraction of GNP related to external trade rose from 83% in 2000 to 98% in 2006. Ghana’s principal economic challenges are low productivity, the high cost of access to financial services, prohibitive bank interest rates, and an underdeveloped infrastructure, transport and human capital.

Agriculture, forestry and fishing

Agriculture is very important to Ghana, in terms of both GNP and export income. About 30% of its lands are cultivated. Cacao, its principal specialty and most important export, is grown on 1.6 million hectares, most often by small producers.

The Ministry of Food and Agriculture is responsible for formulating policy. Its objectives are food security, the production of raw materials for industry and agricultural products for export, helping small farmers, and the processing and marketing of agricultural products. It intervenes in two main areas, as laid out in the revised Food and Agricultural Sector Development Policy document (FASDEP II): (1) creating better opportunities for commercialization, notably through the development of infrastructure such as roads, warehouses, and irrigation; and (2) supplying appropriate technologies to agricultural services.

National agricultural Research System (NARS)

The establishment of a NARS brought most of Ghana’s agricultural research organizations together under a single banner for the first time. The NARS implements new technologies in collaboration with the Ministry of Food and Agriculture. Dissemination of this research is partly supported by the Agriculture Services Sub-sector Investment Project (AgSSIP), which is
coordinated by the Council for Scientific and Industrial Research.

By launching AgSSIP in 2001, the government of Ghana and the World Bank hoped to increase agricultural productivity and income, reducing rural poverty.

NARS STRUCTURE

Ghana NARS includes:

- Colleges and schools of agriculture in the following public universities:
  - University of Ghana, Legon-Accra,
  - University of Cape Coast, Cape Coast,
  - University of Development Studies, Tamale,
  - Kwame Nkrumah University of Sciences and Technologies, Kumasi;

- Agriculture-oriented CSIR institutes:
  - Animal Research Institute (ARI), Accra,
  - Crop Research Institute (CRI), Kumasi,
  - Forestry Research Institute of Ghana (FORIG), Kumasi,
  - Food Research Institute (FRI), Accra,
  - Oil Palm Research Institute (OPRI), Kade,
  - Plant Genetic Research Institute (PGRRI), Bunso,
  - Savannah Agriculture Research Institute (SARI), Tamale,
  - Soil Research Institute (SRI), Kumasi,
  - Water Research Institute (WRI), Accra.

- The Biotechnology and Nuclear Agriculture Research Institute (BNARI), which is operated by the Ghana Atomic Energy Commission (GAEC), Accra.

The Council for Scientific and Industrial Research (CSIR)

Agricultural research is carried out by both public and private institutions, with substantial support from international agricultural organizations. The CSIR, public universities, BNARI, and the Cacao Research Institute of Ghana (CRIG) are the country’s most important research institutions. The NARS is coordinated by the CSIR.

Created in October 1968 and established in its present form in November 1996, the CSIR has its origins in Ghana’s National Research Council (NRC). In 1963, the NRC merged with Ghana’s old Academy of Sciences. In 1966, the Academy was reorganized into two new entities: the CSIR and the Ghana Academy of Arts and Sciences.

VISION, MISSION AND MANDATES

The CSIR comprises 13 institutes spread throughout the country, with a total personnel of about 4,114 workers and 542 researchers. It possesses the following mandates:

- to implement government policy on agricultural development;
- to advise the Ministry on scientific and technological advances that could be useful for national development;
- to encourage and coordinate scientific research on the management, exploitation, and conservation of Ghana’s natural resources; and
- to encourage scientific and industrial research in agriculture, health, medicine, environmental science, technology, and other sectors.

THE WORKS OF CSIR AGRICULTURAL INSTITUTES

Among the CSIR’s thirteen specialized institutes, nine are directly involved in agricultural research: ARI, CRI, FRI, FORIG, OPRI, PGRRI, SARI, SRI, and WRI.

The Animal Research Institute (ARI) works on problems faced by the livestock industry. Through the CSIR, it advises the government on policy issues related to cattle and poultry production. Its current research programs include package management and economical feed for farmers (both individuals and industrial farms), the use of agricultural and industrial products in producing quality feed, disease control and the development of good management strategies, integrating plant-based medicines into the health care system, and the identification of social, cultural, and economic factors limiting production and technology transfer.

The institute has a parasitology lab, a microbiology lab, a biotechnology and nutrition lab, a veterinary clinic, a mill, and a library. It is headquartered in Achimota, in the Greater Accra region.

The Crop Research Institute (CRI) is busy developing better varieties of food and industrial crops, as well as their corresponding production technologies, in order to augment food security. In addition to the development of maize varieties with high-quality protein or a more efficient utilization of nitrogen, its research program encompasses questions such as dealing with drought and striga, developing more productive and resistant varieties of rice, efficient water management technologies, improving vegetables by breeding precocious varieties, etc.

Its research is also concerned with crops such as soy, peanuts, mangos, lemons, etc.
The Food Research Institute (FRI) has a mandate for applied research assisting local food industries. The institute helps them improve and diversify their operations. The FRI also advises the government on food policy, offers technical services and analysis to several local industries, and supports those public and private companies without laboratories of their own.

The FRI develops food products based on local crops such as cassava, yam, taro, and plantain. It has published books of recipes based on soy, fermented corn, and composite flour (breads). Finally, it has initiated training programs in quality control and microbiological food security. These sessions are intended for students of universities and other tertiary institutions, quality control workers, and other technical personnel.

Equipped with laboratories for chemical, microbiological, and biochemical analysis, the FRI now enjoys the international recognition of ISO 17025 certification.

The Forestry Research Institute of Ghana (FORIG) also deals with research into forest products, the management and sustainable exploitation of Ghana’s forest resources, and commercialization of its own results and services. Its research projects include communal management of Ghana’s secondary forests, the development of technologies for establishing and managing plantations, and finding ways to commercialize bamboo. The institute is also on the front lines trying to reduce usage of certain species such as coconut palms, oil palms, and the rubber tree.

The institute possesses two nurseries (with irrigation machines, equipped laboratories, inoculation chambers, and incubators) and a molecular biology laboratory.

The Plant Genetic Resources Research Institute (PGRRI) is responsible for collecting and conserving genetic resources of plants throughout Ghana. The institute is involved with research on lemon, mango, avocado, etc. in order to increase the supply of crop materials available to farmers. It is also involved with the characterization, evaluation, and conservation of underutilized species; in the establishment and maintenance of gene banks; and in the low-temperature conservation of seeds.

The Savannah Agricultural Research Institute (SARI) supports small farmers in three regions of northern Ghana by supplying innovations, options, and technologies to increase and maintain soil fertility. The goal is to increase production through a system of sustainable agriculture. Its mandate also integrates the development of harvesting systems and crop varieties (maize, rice, sorghum, millet, soy, peanut, bambara nuts, cotton, vegetables, etc.) that are better adapted to the various ecological zones of northern Ghana.

The institute possesses fields in the principle agricultural zones of northern Ghana. Its laboratories are well equipped for agronomy, plant protection, and soil research. It also has a cotton laboratory capable of measuring several fiber characteristics simultaneously.

The Soil Research Institute (SRI) is interested in how Ghana’s soil resources can be utilized and managed to achieve sustainable agriculture and industry, as well as maintain environment. Its research program involves evaluating the adequacy of lands, classifying and taking inventory of soils, and managing and improving soil fertility. Another important aspect of the institute’s work is managing environmental factors related to land degradation, climate change, erosion control, and water/soil management. Finally, SRI offers the services of its laboratories for soil, plant, and water analysis.
It possesses laboratories equipped for computer-assisted cartography; the evaluation of soil fertility, mold levels, and microbial activity; erosion control studies; and general data analysis.

The Water Research Institute (WRI) carries out investigations on all aspects of Ghana’s water resources, in order to provide the services and scientific information necessary for sustainable development. The institute is at the forefront of research on fisheries, with an eye towards improving multiple aspects of that industry: reservoirs, lakes, lagoons, coastal waters, fish genetics and reproduction, and aquaculture methods.

The WRI is based in Accra, but also has a branch in Tamale and a research center in Akosombo. It has chemical, biochemical, and microbiological laboratories as well as a hydro-meteorology station for monitoring the aquatic environment. It also possesses some specialized equipment, notably an atomic absorption spectrometer and an ionic chromatograph.

The Biotechnology and Nuclear Agriculture Research Institute (BNARI), created in September 1993, is one of three research institutes operated by the GAEC. Its purpose is to promote the research, development and commercialization of safe, peaceful biological and nuclear agricultural technology. The techniques issuing from this research are designed to improve agricultural productivity, health services, and industrial products for Ghana’s social and economic advancement.

Accomplishments of BNARI

Radiation treatment: To improve the safety of agricultural products, BNARI determined the optimum dose for improved hygiene and the elimination of insect-borne diseases. It also developed standards for irradiated food.

Crop production and improvement: BNARI established the country’s largest functional tissue culture laboratory, where it analyzes and grows explants from selected crops in vivo and in vitro. The institute has been able to develop improved varieties of many food crops, including an improved cassava and a cacao plant resistant to “swollen shoot” disease.

Animal production and health: Activities in this category include packaging improved seeds, using product-based agriculture, animal insemination and reproduction, diagnosis and control of the principal cattle diseases, oversight of vaccination efficiency, etc.

Control of insects and pestilence: BNARI developed the sterile insect technique (one component of the effort to control and eradicate tsetse flies), and also an inherent sterility technique for the control of maize stalks.

Public Universities

The University of Ghana now has an Institute for Agricultural Research (IAR), which coordinates three research centers.

Created in 1953, the Legon Center for Agricultural Research covers an area of about 740 hectares in the plains of Accra. It is specialized in animal research: reproduction and nutrition, veterinary medicine, improving pastures, and enhancing milk quality through crossbreeding.

The Kpong Center for Agricultural Research, founded in 1954, occupies about 420 hectares of heavy soil in the coastal savannah. Its research focuses mainly on rice, sugar cane, sorghum, and beef, but also works to improve agriculture using automated irrigation in the region.

In Kade, the Center for Agricultural Research was founded in 1957. It covers 1090 hectares of a forested zone. Its research focuses on the following crops: lemon, rubber, cola, mango, oil palm, cacao, avocado, spices, plantain, taro, rice, and vegetables. The Center also advises agriculture students, from other universities as well as its own. It manufactures its own palm oil and rubber, on a small scale. Finally, it possesses a rice mill that adds value to the produce of regional farmers.

Research highlights

During the four years that AgSSIP operated, more than 150 projects were carried out by NARS scientists through 15 product-based research programs. Their years of labor have generated a number of new technologies. By March 2006, this effort had created 18 improved crop varieties (peanut, cotton, coconut, pepper, cowpea, rice, and oil palm), improved tilapia reproduction, introduced 39 practices to improve production, developed 5 proven agricultural systems, and designed 3 new pieces of agricultural equipment. A few examples are given below.

CEREALS

Maize. Research on maize was carried out by the CRI, SARI, SRI, FRI, universities, BNARI, the Council for the Development of Seeds and Vegetables, and the agricultural engineering and cultivation services of the Ministry of Food and Agriculture. These local centers also collaborated with international research institutions.
Over the past three decades, efforts to improve maize have focused on high-yield hybrids with robust and stable seeds. Other work includes improving the quality and variety of seeds, increasing protein content, and adapting the crop to the country’s various agro-ecological zones. Several improved varieties have been distributed to farmers via CSIR institutes.

**Sorghum.** SARI is a shining example of research efforts in this sector. Six improved varieties of sorghum have been conceived thanks to its work, some of which have been used by farmers since 1971. The Kapaala variety is notably superior, not just in terms of nutrition but also for brewing.

**Millet.** SARI has been investigating millet varieties cultivated in India and other Asian countries. Thanks to ICRISAT, it also obtained samples that were subsequently evaluated at the Manga research station. It has been noted that most of these exotic strains were slow to mature compared to local varieties. Five strains (issuing from three hybrids) were able to mature more rapidly, retaining disease resistance and high productivity.

**Rice.** Several institutions carried out research on rice, including SARI which created five improved varieties for farmers. Research continues on other varieties. Most of 80 000 hectares sown with rice in northern Ghana each year are highly recommended by SARI. Local research efforts were aided by collaboration with international research centers.

Research in progress includes the characterization and identification of regions good for rice production, the reproduction of high-yield seeds, fixing biological nitrogen for rice growth, and establishing packages suited to various environments.

**LEGUMES**

**Cowpea.** Research on the cowpea is conducted mainly by CRI and SARI, who have conceived several varieties that are now widely cultivated by the farmers of Ghana. There is an ongoing collaboration with the IITA to develop varieties resistant to various pests, insect-borne diseases, and parasitic plants. New varieties resistant to striga must be suitable for cowpea cultivation systems.

**Peanuts.** Peanut research has largely emphasized the collection and evaluation of locally cultivated varieties. The selection of cultivars was based on their adaptation, yield and stability, precocious maturation (for zones with a short growing season), and resistance to pests and disease. There is now a collaboration with the Niamey branch of ICRISAT for the work of reproduction. Through SARI’s research, the Committee for Realizing National Varieties has conceived four peanut genotypes. CRI has also created four new varieties. All eight were designed for high productive potential, adaptability, stable yields, tolerance for pests and diseases, and widespread use.

**Soybeans.** CRI and SARI are both carrying out research on soy, whose production is constrained by several factors. Its popularity in Ghana is quite limited, so the product faces a very weak local market. (The market has improved since 1988, however, following a massive promotional campaign.) In addition, problems with seed storage limit the viability of this crop. Research objectives include the development of stable, high-yield varieties, precocious varieties for the minor growing season, varieties adapted to multiple harvest systems, storage systems that more effectively protect the beans from destruction, and practices aimed at improving seed production.

**ROOT AND TUBER CROPS**

**Cassava.** Research on cassava began as early as the 1930’s, with an emphasis on testing, selection, and increasing the number of races and exotic varieties. Selection criteria included resistance to the mosaic virus, high yield, cooking qualities, and high starch content.
Prof. EMMANUEL OWUSU-BENNOAH
Director General of CSIR

Professor Emmanuel Owusu-Bennoah has been the Director-General of the Council for Scientific and Industrial Research (CSIR) since 2004. He took over this position from Prof. Walter S. Alhassan who is currently with the Forum for Agricultural Research in Africa (FARA), Accra.

In 1999 Prof. Owusu-Bennoah was appointed the Deputy Director-General of CSIR in charge of Agriculture, Forestry and Fisheries Sector, which is also the coordinating secretariat of the Agricultural Services Sub-Sector Investment Project (AgSSIP), a World Bank funded project. He holds a PhD in Soil Chemistry and Plant Nutrition (Reading, UK) as well as an expert in Research Management. He is an astute Chief Research Scientist of International repute and has been a University lecturer both local and international since 1979.

He is the current Chairman of the Governing Board and the General Assembly of the West and Central African Council for Agriculture Research and Development (CORAF/WECARD). He is an Executive Member to FARA. In 2006 he was involved, together with colleagues, in assessing about 200 Concept notes and 30 complete research proposals from scientists from the three sub-regional Associations of Africa namely, CORAF/WECARD, ASARECA and SADC.

He is a Member of International Experts who assisted FARA to put responses to the queries raised by the Review Panel of the Science Council of the Consultative Group for International Agricultural Research (CGIAR) on the SSA-CP; a Member of the Board of Trustee of the West African Rice Development Association (WARDA); Chairman of the Programmes Committee of WARDA and a Member of IITA Programmes Committee; a Council Member of College of Agriculture and Consumer Science of the University of Ghana; and a member of CTA/ACP Advisory Board on Science and Technology. Member of many learned Societies including International Soil Science Society, Ghana Soil Science Society and Ghana Science Association.

He participated in the development of the West and Central African Medium Term Programme (WCA MTP). This involves the GC Centres, sub-regional organization (CORAF/WECARD), the NARS and other Stakeholders in the sub-region. He was also involved in the organization of CORAF/WECARD Donors and Stakeholders Meeting and participated in the Donors Meeting organized by FARA in London.

During the celebration of the 20th Anniversary of CORAF/WECARD which took place, on 31st May 2007 in Abidjan Cote d’Ivoire, Prof E. Owusu-Bennoah the Director-General was awarded a gold medal for his contribution to S&T in West and Central Africa by the Ivorian Government. At the same function, The Institut de l’Environnent et de Recherches Agricoles, INERA of Burkina Faso also honoured the Director-General with a bronze carving.

He has refereed a number of scientific papers for Ghana Journal of Agricultural Science, Ghana Journal of Science, Applied Science and Technology and Australian Journal of Soil Research. He has about 60 publications in refereed journals and international conference proceedings to his credit.

Under his leadership, the CSIR has developed and transferred several technologies and provided various services through its research programmes for national development in almost all sectors of the Ghanaian economy. Over the years, the research programmes of the Institutes under the Council have been designated to fit into national priority programmes. Thus for now CSIR’s current Research and Development programmes are directly related to national development agenda which include the following:

- Growth and Poverty Reduction Strategy,
- Food Security,
- Golden Age of Business,
- President’s Special Initiative,
- Millennium Development Goals.

Prof. Owusu-Bennoah believes that the Council has reliable expertise and that given the needed research funding it is capable of breaking new grounds and recording greater exploits within the country and even beyond the shores of Ghana.
Research on improving varieties began again in the mid-1980’s, with the establishment of RTIP (Root and Tuber Improvement Programme). Some new varieties with acceptable processing qualities have since been realized.

**Yam.** Little research has been done on yam cultivation during the last two decades. The GAEC has invested in seed reproduction techniques based on the Guinea yam flower, as well as tissue culture techniques. Seed production technologies introduced by the IITA have been adapted to local conditions. The CRI has created three yam varieties: CRI-Kukrupa, CRI-Mankrong Pona, and CRI-Pona.

**Sweet potato.** In 2006 the CRI created four varieties of this crop: CRI-Hi Starch, CRI-Ogyefo, CRI-Otoo and CRI-Apomden.

**VEGETABLES**

**Pepper.** The CRI has created two varieties of pepper: CRI-Shito-Adope and CRI-Moko Ntoos. The SARI has investigated whether solarization, a method currently used to sterilize seeds before storage, could also be used to blanch these two varieties before drying. Their research indicates that the method is adequate. This study will help manufacturers save on fuel costs.

**INDUSTRIAL CROPS**

**Cotton.** The SARI has created two varieties of the cotton plant with higher yields than the commercial variety: SARCOT I and SARCOT 5. Studies are underway to determine how best to extend their cultivation.

**HORTICULTURE**

At the Kwame Nkrumah University of Science and Technology, scientists in the Horticulture Department supported by AgSSIP have developed a new system for generating cultivation materials. Seeds planted using AgSSIP Mix (the name of the system) sprout more quickly and abundantly than those growing elsewhere, and are also more resistant to disease. AgSSIP Mix is therefore a good propagation technique. Further trials must be carried out to determine the range of plants that can benefit.

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CSIR AgSSIP Secretariat on CSIR Campus, Accra.
PEST CONTROL

In its mass production laboratory in northern Ghana, the SARI is tackling biological control of the larger grain borer Prostephanus truncatus. In August 2001, a first attempt at biological control was made as part of RTIP. Between November 2001 and December 2004, 55,539 individual predators were produced; these controls were supplied to 68 sites in 8 districts of northern Ghana. In 2005, 40,000 predators were produced and supplied to 9 sites in 5 districts.

FISHING

Fishing is practiced in inland waters using lines, traps, etc. Aquaculture is practiced in ponds and reservoirs. The most important fishing sites are Lake Volta and the lagoons.

The marine fishing industry accounts for about 84% of the nation’s fish production. This figure includes the “artisanal” (small-scale and dugout fishing), semi-industrial (coastal fishing), and industrial sectors. Most of the fish are exported, but freshwater products are sold in local markets. This industry supplies jobs and income to families living along the coast, around Lake Volta, or near medium-sized reservoirs and lagoons.

FRI researchers have developed a device to improve the efficiency of fish processing. Baptised the AFRISMO-150, it improves upon a smoking chamber previously developed by the SIR-FRI. It not only produces products of superior quality, but eliminates the need to fastidiously change the platter position during the process; the operator can now devote smoking time to other activities. Finally, since the operator no longer needs to enter the chamber during smoking, the AFRISMO-150 eliminates the health risks associated with this activity.

POULTRY

The production of helmeted guineafowl (Numida meleagris) in northern Ghana has expanded rapidly with the development of a new technology that dramatically improves performance. This achievement is due to the “Rural Keeping/Brooding Management of Local Poultry” project, under the direction of the Animal Sciences Department at the University of Development Studies in Tamale. Members of the project collaborated with scientists at the Kwame Nkrumah University of Science and Technology (Animal Science Department), the ARI in Accra, and the University of Cape Coast (School of Agriculture).

This six-month study was financed by AgSSIP. The success of the study extends throughout Northern Ghana.
Towards the integration of agricultural research and sustainable development CORAF/WECARD was created in 1987 as a conference of African and French agricultural research directors. In 1995, it enlarged its base to include English-speaking and Portuguese-speaking countries of West and Central Africa. Its 21 member states comprise an area of 11.5 million km2 and a population of 318 million, 70% of whom are engaged in agricultural activities.

New orientations

The mission of CORAF/WECARD is to work towards “sustained improvement in the competitiveness, productivity, and markets of agricultural systems in West and Central Africa, by satisfying the principal research requirements of target groups in the sub-region.”

Twelve years after its creation CORAF/WECARD formulated a fifteen-year Strategic Plan (1999-2014). First adopted in 2000, the Plan was reviewed and amended after three years of operation in 2003. A new review process was begun early in 2006, which should unveil a new Strategic Plan in 2007 covering the next ten years (2007-2016) of operation.

Launching a second revision of the 1999-2014 Plan allows CORAF/WECARD to take into account new strategies laid out in the CAADP and FAAPP, and better implement the West and Central African Agricultural Productivity Programs (WAAPP and CAAPP). A second revision is also urgently needed because CORAF has established new strategic relationships with regional economic communities (REC).

Among other questions issuing from this review process, it has been noted that the support provided to agricultural researchers in the context of the 1999-2014 Plan was rather fragmented. It has been recommended that this support should be better coordinated and harmonized by soliciting the participation of all parties involved, especially producers.

The review of the 1994-2014 Strategic Plan and an advisory meeting of the principal actors (which also took place in 2006) both emphasized the need for CORAF to redefine its approach to agricultural research and development.

The changes and challenges raised by the new agriculture strategy, productivity program initiatives (WAAPP and CAAPP), and the interest manifested by partners in development have prompted CORAF/WECARD to adjust its stance.

Those parties most closely tied to CORAF/WECARD activities met in February 2006 to discuss the means and approach of a new Strategic Plan covering the period 2007-2016. This document is therefore the fruit of important and wide-reaching discussions, including all interested parties, and representative of the entire West and Central African agricultural research system.

The methodology for revising the 1999-2015 Strategic Plan consisted of establishing a hierarchy...
Reforms in Perspectives

of sub-regional research priorities. A series of workshops was then organized so that the key players could translate these priorities into a coherent agricultural research and development strategy. These workshops resulted in a ten-year Strategic Plan (2007-2016) and a five-year Operational Plan (2007-2011). In effect, a detailed Operational Plan, Planning System, and mechanisms for follow-up evaluation were put in place, along with an institutional change team, to guarantee timely results and the functionality of the Strategic Plan.

To improve the process of consultation with other players, CORAF/WECARD is organizing several advisory workshops. The first two took place in the last trimester of 2006, and furnished the organization with precious data on the planning process. Future events will improve everyone’s understanding of the operational and Strategic Plans, and encourage all parties to take a more active role in implementing them.

CORAF/WECARD will implement the ten-year Strategic Plan (2007-2016) through two detailed, five-year Operational Plans. Each Operational Plan will specify what, how, and when necessary resources will be mobilized, and who will be responsible.

This approach will produce intermediate results that can be used to evaluate the progress of the operational plans, which are subject to annual review.

2007 validation

Numerous parties were involved in revising the Strategic Plan: the regional economic communities UEMOA, CEMAC, ECCAS, and ECOWAS; the CMA/AOC; the NARS of member states; various international centers for agricultural research; development partners; the private sector; producers’ organizations; and NGOs involved in agricultural development.

All these players have, during the first advisory meetings, approved and validated a common strategy for implementing the WAAPP and CAAPP programs as laid out in the CAADP.

Definitive validation of the new Strategic Plan and Operational Plan will take place in 2007, after several workshops planned for the first semester.
<table>
<thead>
<tr>
<th>Date</th>
<th>Location</th>
<th>Event Description</th>
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| 23-24 FEBRUARY 2006   | DAKAR (SENEGAL)  | Donors’ Conference  
|                       |                  | Organizer: CORAF/WECARD  
|                       |                  | Objective: To develop together a coherent and sustainable strategy of investing in agricultural research for development in the sub-region.  
|                       |                  | Participants: CORAF/WECARD, ECOWAS, CEEAC, NEPAD, FARA, investors, national agencies and ministries for agricultural development, ministries of finance and planning, private sector. |
| 23 MARCH 2006         | DAKAR (SENEGAL)  | A memorandum of understanding was signed between Dr. Paco Sereme, Executive Secretary of CORAF/WECARD, and Dr. Thomas A. Lumpkin, Director General of the World Vegetable Cartel (AVRDC). |
| 22-29 APRIL 2006      | SEREKUNDA (GAMBIA) | Seventh General Assembly of CORAF/WECARD  
|                       |                  | Presiding: Prof Emmanuel Owusu-Bennoah, president of CORAF/WECARD |
| 24 APRIL 2006         | SEREKUNDA (GAMBIA) | First 2006 session of the CORAF/WECARD Administrative Council  
|                       |                  | Presiding: Prof Emmanuel Owusu-Bennoah, president of CORAF/WECARD |
| 12-15 SEPTEMBER 2006  | OUAGADOUGOU (BURKINA FASO) | Regional conference for IPGRI and CORAF  
|                       |                  | Objective: To promote regional cooperation for ex situ conservation of PGRFA in West and Central Africa. |
| 14-15 NOVEMBER 2006   | SALY PORTUDAL (SENEGAL) | Planning/revision workshop for the CORAF/WECARD Strategic Plan  
|                       |                  | Definition of research priorities for the Strategic Plan. |
| 17-18 NOVEMBER 2006   | SALY PORTUDAL (SENEGAL) | Medium-term research priorities for the Plan. |
| 12-15 DECEMBER 2006   | DOUALA (CAMEROON) | Planning/revision workshop for the CORAF/WECARD Strategic Plan  
|                       |                  | Participants: NARS, CEDEAO, UEMOA, CEMAC, development partners, national and regional organizations, private sector. |
| 16 DECEMBER 2006      | DOUALA (CAMEROON) | Second 2006 session of the CORAF/WECARD Administrative Council |
The West and Central African Council for Agricultural Research and Development (CORAF/WECARD) consists of four hierarchical entities: the General Assembly, the Governing Board, the Scientific and Technical Committee, and the Executive Secretariat. These organs supervise the activities of local operational units, which implement the organization’s objectives in various sub-regions.

GENERAL ASSEMBLY (GA)

Representatives of the General Assembly are drawn from the NARS of member countries, regional and international agricultural research institutions operating in the sub-region, the private sector, professional agricultural organizations (PAO), and development partners. The General Assembly must ratify all decisions, and determines the overall goals and orientation of CORAF/WECARD.

GOVERNING BOARD (GB)

The Governing Board acts on and pursues the decisions of the General Assembly. The Board has nine members:

- 6 SNRA representatives elected by the GA, and 3 representatives drawn from agricultural research partners (NGOs, private sector interests, and farmers’ groups).

SCIENTIFIC AND TECHNICAL COMMITTEE (STC)

The Scientific and Technical Committee serves as an advisory board to the AC. Its role is to evaluate the ensemble of scientific activities and assist the Executive Secretariat in animating and coordinating those activities. It has twelve members, scientists drawn from NARS and partner institutions, chosen intuiti personae for their competence.

EXECUTIVE SECRETARIAT (ES)

The Executive Secretariat is composed of four permanent employees (the executive secretary, the scientific coordinator, the administrative and financial manager, and the manager of information and communication) and various support personnel. Under the direction of the executive secretary, the ES carries out the decisions of the GA, follows the progress of scientific activities, audits research programs, manages human and financial resources, and prepares statutory meetings.

Some members of the support staff at the CORAF/WECARD Executive Secretariat headquarters, Dakar
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<th><strong>Support staff</strong></th>
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CORAF/WECARD brings together the NARS of 21 countries, divided into three agro-ecological zones:

- the Sahelian Zone of West Africa,
- the Coastal Zone of West Africa, and
- the Central Africa Zone.

Here is the list of member nations:

- Benin
- Burkina Faso
- Cameroon
- Cape Verde
- Central African Republic
- Chad
- Côte d’Ivoire
- Congo
- Democratic Republic of Congo
- Gabon
- Gambia
- Ghana
- Guinea
- Guinea Bissau
- Mali
- Mauritania
- Niger
- Nigeria
- Senegal
- Sierra Leone
- Togo

Where to find the reports and studies quoted in this 2006 CORAF/WECARD Annual Report?

Extended and original versions of the reports and studies quoted in this document can be found from the CORAF/WECARD web site (www.coraf.org) or directly from the following web sites:

- CARBAP : www.carbapafrica.org
- CERAAS : www.ceraas.org
- CIRDES : www.cirdes.org
- IFPRI : www.ifpri.org
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# ABBREVIATIONS AND ACRONYMS

## AAA
- **AATF**, African Agriculture Technology Foundation  
- **ACP**, Africa, Caribbean, Pacific  
- **ADB**, African Development Bank  
- **AgSSIP**, Agricultural Services Sub-Sector Investment Project, Ghana  
- **ARDESAC**, Appui à la Recherche Régionale pour le Développement Durable des Savanes d’Afrique Centrale (Supporting Regional Research for Sustainable Development of the Savannah of Central Africa)  
- **ARI**, Animal Research Institute, Ghana  
- **ASARECA**, Association for Strengthening Agricultural Research in Eastern and Central Africa

## BBB
- **BMZ**, Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung (Deutsch Ministry for Economic Cooperation and Development)  
- **BNARI**, Biotechnology Nuclear Agricultural Research Institute, Ghana

## CCC
- **CAMES**, Conseil Africain et Malgache de l’Enseignement Supérieur (African and Malagasy Center for Higher School)  
- **CARBAP**, African Research Centre on Banana and Plaintain  
- **CBD**, Convention on biological diversity  
- **CEMAC**, Central Africa Economic and Monetary Community  
- **CERAAS**, Regional Centre for Studies on the Improvement of Plant Adaptation to Drought  
- **CGIAR**, Consultative Group for International Agricultural Research  
- **CIFOR**, Centre for International Forestry Research  
- **CIRAD**, French Agricultural Research Centre for International Development  
- **CIRDES**, International Centre for Research-Development on Livestock in the Sub-Humid Zone  
- **CMA/AOC**, Conférence des Ministres de l’Agriculture/Afrique de l’Ouest et du Centre (Conference of West and Central Africa Ministries of Agriculture)  
- **CNRA**, Centre National de Recherche Agricole, ISRA, Senegal  
- **CRI**, Crops Research Institute, Ghana  
- **CTA**, Technical Centre for Agricultural and Rural Development  
- **CORUS**, Coopération par la Recherche Scientifique et Universitaire (Cooperation through University and Scientific Research)  
- **CSIR**, Council for Scientific and Industrial Research, Ghana

## DDD
- **DFID**, Department for International Development, United Kingdom  
- **DHS**, Distinction, Homogeneity and Stability  
- **DREAM**, Dynamic Research Evaluation for Management

## EEE
- **ECCAS**, Economic Community of Central African States  
- **ECOWAS**, Economic Community of West African States  
- **ELAT**, Ecole de Lutte Anti-Tsétsé (School for the Fight Against Tsetse Flies)  
- **EU**, European Union  
- **ES**, Executive Secretariat

## FFF
- **FAAPP**, Framework for Africa Agriculture Productivity Programme  
- **FAQ**, United Nations Food and Agriculture Organization  
- **FARA**, Forum for Agricultural Research in Africa  
- **FASDEP**, Revised Food and Agricultural Sector Development Policy  
- **FORIG**, Forestry Research Institute of Ghana  
- **FRI**, Food Research Institute, Ghana

## GGG
- **GA**, General Assembly  
- **GAEC**, Ghana Atomic Energy Commission  
- **GC**, Governing Council  
- **GeRiCo**, Gestion des insectes ravageurs du cotonnier (Management of Cotton-Ravaging Insects)  
- **GIS**, Geographical Information System  
- **GNP**, Gross National Product

## III
- **IAR**, Institute for Agricultural Research, Ghana  
- **ICRAF**, International Centre for Research in Agroforestry  
- **ICRISAT**, International Crop Research Institute for the Semi-Arid Tropics  
- **IFAD**, International Fund for Agricultural Development  
- **IFPRI**, International Food Policy Research Institute  
- **IITA**, International Institute of Tropical Agriculture  
- **INERA**, Institut de l’Environnement et de Recherches Agricoles (Institute for Environmental and Agricultural Research, Burkina Faso)  
- **IDRC**, International Development Research Centre  
- **IWMI**, International Water Management Institute
Annexes

**MMM**
MTP, Mid-Term Programme

**NNN**
NARS, National Agricultural Research System
NEPAD, New Partnership for Africa Development

**OOO**
OPRI, Oil Palm Research Institute, Ghana

**PPP**
PARAO, Programme for the Support of Agricultural Research in West Africa
PGRRI, Plant Genetic Resources Research Institute
CAAPP, Central Africa Agricultural Productivity Programme
WAAPP, West Africa Agricultural Productivity Programme
CAAPP, Comprehensive Africa Agricultural Development Programme
PRASAC Regional Pole of Applied Research for the Development of Central Africa
PROCORDEL, Programme Conjoint de Recherche sur l’Élevage en Afrique de l’Ouest (Joint Programme for Husbandry Research in West Africa)
PR-PICA, Programme Régional de Protection Intégrée du Cotonnier Africain (Regional Programme for Integrated Protection of African Cotton)

**RRR**
REC, Regional Economic Community
ROCARIZ, Réseau Ouest et Centre Africain du Riz (West and Central Africa Rice Network)
GRENEWCA, Genetic Resource Network for West and Central Africa
WCASRN, West and Central Africa Sorghum Research Network

**SSS**
SAED, Société Nationale d’Aménagement et d’Exploitation des Terres du Delta du Fleuve Sénégal (National Society for Developing and Exploiting the Senegal River Delta, the Senegal River Valley, and the Falémé)
SARI, Savannah Agricultural Research Institute, Ghana
SRI, Soil Research Institute, Ghana
SSA-CP, Sub-Saharan Africa Challenge Programme
SADC, South African Development Community

**TTT**
TFS, Tropical Ferruginous Soils

**UUU**
UEMOA, Union Economique et Monétaire Oues-Africaine (West African Economic and Monetary Union)
UPOV, International Union for the Protection of New Variety of Plants
URBIO, Unité de Recherche en Biologie (Biological Research Unit)
URPAN, Unité de Recherche sur les Productions Animales (Animal Production Research Unit)
USAID, United States Agency for International Development

**WWW**
WARDA, West Africa Rice Development Association/Africa Rice Center
WB, World Bank
WCA, West and Central Africa
WECAMAN, West and Central Africa Collaborative Maize Research Network
WRI, Water Research Institute, Ghana

**ZZZ**
ZADI, Zentralstelle für Agrardokumentation und – information (Center for Agricultural Documentation and Information)
CORAF/WECARD is one of the four sub-regional organisations for scientific and agricultural cooperation in Africa that make up the Forum for Agricultural Research in Africa (FARA). It was founded in March 1987 and currently brings together the National Agricultural Research Systems (National Agricultural Research Institutes, Universities, NGO’s, Professional Agricultural Organisations, Private Sector, etc.) of the following countries: Benin, Burkina Faso, Cameroon, Cape Verde, Central African Republic, Chad, Congo, Côte d’Ivoire, Democratic Republic of Congo, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, and Togo.

Its mission is to make agricultural research more efficient and effective in West and Central Africa by contributing to build and consolidate the capacities of National Agricultural Research Systems and serving as a backstopping mechanism in efforts to achieve food self-sufficiency, improve the competitiveness of the sub-region’s agricultural commodities and fight against poverty based on environmental preservation, the major constraints of the sub-region.

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