



# ANNUAL REPORT

30



Years of  
Innovation

2017



# CORAF

## Rapport annuel 2017

30 années de prises de décisions innovantes  
à mettre à l'échelle en Afrique de l'Ouest et du Centre

CORAF (Conseil Ouest et Centre Africain pour la Recherche et le Développement  
Agricoles / West and Central African Council for Agricultural Research for Development)  
7 Avenue Bourguiba  
B.P. 48, cp 18523, Dakar, Senegal  
Tel: +221-338699618  
Fax: +221-338699631  
Email: [secoraf@coraf.org](mailto:secoraf@coraf.org)  
Website: [www.coraf.org](http://www.coraf.org)

ISBN .....(print)

ISBN ..... (pdf)

# Abbreviations & Acronyms

AFD	Agence Française de Développement
AfDB	Africa Development Bank
AGRA	Alliance for a Green Revolution in Africa
AGRYHMET	Centre Régional de Formation et d'Application en Agrométéorologie et Hydrologie Opérationnelle
AHC-STAFF	African Human Capacity Strengthening
APESS	Association pour la Promotion de l'Élevage au Sahel et en Savane
AR&D	Agricultural Research and Development
ARI	Advanced Research Institution
AU	African Union
CAADP	Comprehensive Africa Agriculture Development Program
CAP	Common Agricultural Policy of Central Africa
CEMAC	Communauté Économique et Monétaire de l'Afrique Centrale
CGIAR	Consultative Group on International Agricultural Research
CILSS	Comité Permanent Inter-Etats de Lutte Contre la Sécheresse au Sahel
CORAF	West and Central African Council for Agricultural Research and Development
CRA	Centre Régional AGRHYMET
DFATD	Department of Foreign Affairs, Trade and Development
DFID	Department for International Development
ECCAS	Economic community of Central African States
ECOWAP	Economic Community of West African States Agricultural Policy
ECOWAS	Economic Community of West African States
EMMP	Environment monitoring and mitigation plan
ERF	Environmental review form Executive Secretariat
FAAP	Framework for African Agricultural Productivity
FARA	Forum for Agricultural Research in Africa
FtF	Feed the Future (USAID)
GA	General Assembly
GB	Governing Board
IARC	International Agricultural Research Centre
IAR4D	Integrated Agricultural Research for Development
ICRISAT	International Crops Research Institute for the Semi Arid Tropics
IEE Initial	Environment Evaluation
ILWAC	Integrated Land and Water Management for Adaptation to Climate Variability and Change
IP	Innovation Platform
IsDB	Islamic Development Bank
MDTF	Multi Donor Trust Fund
MELIA	Monitoring, Evaluation, Learning and Impact Assessment
NARI	National Agricultural Research Institute
NARS	National Agricultural Research System
NCoS	National Centre of Specialization
NEPAD	New Partnership for Africa's Development
NGO	Non-Governmental Organization
PACA	Partnership for Aflatoxin Control in Africa
PAIRED	Partnership for Agricultural Research, Education and Development
PERSUAP	Pesticide Evaluation Report and Safe Use Action Plan
PROPAC	Plateforme Sous-Régionale des Organisations Paysannes d'Afrique Centrale
PLMF	Support project to the regional plan for control and management of fruit flies in West Africa



# Abbreviations & Acronyms

PID	Priority Intervention Domains
RAFNSIP	Regional Agriculture, Food and Nutrition Security Investment Plan
REC	Regional Economic Community
RCoE	Regional Centre of Excellence
ROPPA	Réseau des Organisations Paysannes et des Producteurs Agricoles
S3A	Science Agenda for Agriculture in Africa
SCARDA	Strengthening Capacity for Agricultural Research and Development in Africa
SDG	Sustainable Development Goals of the United Nations
SP	Strategic Plan
STC	Scientific and Technical Committee
T&I	Technologies and Innovations
UEMOA	Union Economique et Monétaire Ouest Africaine
USAID	United States Agency for International Development
WAAPP	West Africa Agricultural Productivity Program
WAATP	West Africa Agricultural Transformation Program
WASCAL	West African Science Service Center on Climate Change and Adaptation
WASP	West Africa Seed Program
WB World Bank	WCA West and Central Africa

# Table of contents

Foreword	7
Who we are	8
<b>Our 2017 Milestones and Successes</b>	<b>9</b>
<b>1. Consolidating CORAF as a key regional player in agricultural transformation in WCA</b>	<b>10</b>
1.1. Complying with emerging trends in agriculture in WCA	10
1.2. Honing our tools for accelerating agricultural transformation in WC	10
<b>2. Fostering and extending regional and international cooperation in AR&amp;D in WCA</b>	<b>13</b>
2.1 Prompting world-class research cooperation through RCoE	13
2.2 Expanding partnerships and scientific cooperation	13
2.2.1 CORAF-USAID: Bringing the partnership to a higher level	13
2.2.2 Realizing the African Science Agenda in Agriculture (S3A) with FARA	13
2.2.3 Teaming up with African Union for enhanced Animal Genetic Resource management and use	14
2.2.4 CORAF and IITA join forces to rapidly transform agriculture in WCA	14
2.2.5 Developing a new era of partnership between China and West Africa	14
<b>3. New flagship programs to transform agriculture in WCA</b>	<b>15</b>
3.1 Launching a new Partnerships for Agricultural Research, Education and Development (PAIRED) project	15
3.2 Scaling technologies in Central Africa through the West Africa Agricultural Transformation Program (WAATP)	15
<b>4. Improving gender equity in R&amp;D to catalyze innovation in WCA</b>	<b>16</b>
4.1. Gender mainstreaming is taking roots in NARS and regional initiatives	16
4.2. Fostering agribusiness mentality in farming among youth	16
<b>5. Bridging the gap to new technologies for small holder farmers in WCA</b>	<b>18</b>
5.1. Sustaining and scaling up adoption of technologies in WA	18
5.2. Capitalizing on achievements in the seed industry in WA	19
5.3. Animal and aquaculture genetic resources in WA	19
5.4. Towards effective management of the dreadful fruit fly in West Africa	20



# Table of contents

<b>6.</b>	<b>Strengthening capacity for rapid agricultural transformation in WCA</b>	<b>21</b>
6.1.	Channeling Israeli experience to transform West African agriculture	21
6.2.	Grooming the agricultural research workforce and competencies	21
6.3.	Addressing the capacity and productivity constraints on Maize, Cotton and Livestock value chains	21
<b>7.</b>	<b>Administration and Finance</b>	<b>23</b>
7.1.	Human and talent mobilization by CORAF	23
7.2.	Resource mobilization by CORAF	23
<b>8.</b>	<b>Challenges and lessons learned</b>	<b>24</b>
<b>9.1.</b>	<b>Conclusion</b>	<b>25</b>
9.2.	Perspectives	25
<b>ANNEXES</b>		<b>26</b>
Annex 1:	References	26
Annex 2:	Scientific Production of NCoS in the journal Agronomie Africaine: Vol 29, No 1 (2017)	26
Annex 3:	Scientific Production of NCoS in the journal Agronomie Africaine: Vol 29, No 2 (2017)	27
Annex 4:	New projects and study initiated in 2017	28
Annex 5:	The Results Framework of the CORAF Strategic Plan 2018-2027	29

# Foreword:

## Celebrating 30 years of Impact in Agriculture in WCA



Dr Alioune FALL  
Chairman of the Governing Board



Dr Abdou TENKOUANO  
Executive Director

**W**e are pleased to introduce our 2017 Annual Report, coinciding with CORAF's 30th anniversary. Within this period, CORAF has played a leading role in coordinating agricultural research for development in West and Central Africa (WCA) where a growing number of smallholder farmers are accessing innovations and technologies that are impacting on productivity and production of major commodities. CORAF also continued to provide policy options to member states to achieve food security and progress in the agricultural sector.

To sustain these efforts and bring agriculture to a higher level, a restructuring and rebranding process with the aim of strengthening our visibility, relevance and impact were necessary. We have developed a new Strategic Plan (2018-2027) which is a road map through which CORAF and its stakeholders can collectively tackle growing challenges such as climate change, gender disparities, massive migration of youths, and unemployment in WCA.

The rebranding philosophy is also portrayed in our new visual identity. The organization has been using both French and English acronyms (CORAF/WECARD) since it embraced Anglophone countries in the region. However, it was commonly referred to as only CORAF. Therefore, following a broad consultation, it was agreed that henceforth, the organization should be referred to as CORAF and this has been reflected in the new logo of the organization. As part of the activities to celebrate the 30th anniversary, a special logo was designed and the new look for all CORAF products will provide visual coherence – a clearly identifiable brand.

We wish to salute all of you who have been part of the journey that CORAF has traversed over the years in coordinating and advocating for agricultural science, research, technology and innovation. CORAF's management is grateful to the Regional Economic Communities and Monetary Unions (ECOWAS, UEMOA, ECCAS and CEMAC), a host of development partners namely the World Bank, EU, USAID, Global Canada, IDRC, AfDB and IsDB for their support towards our various projects, programs and initiatives. The management also appreciates support from our 23-member countries and their NARS as well as the numerous other stakeholders involved in the implementation of our regional programs and sub-projects, mostly farmer-based organizations (ROPPA, PROPAC, APESSE and RBM), the CGIARs (IITA, AfricaRice, ICRAF, ICRISAT and AVRDC), including the advanced research institutions (CIRAD, IRD and EMBRAPA). This report would not have been possible without these actors who equally receive tremendous backstopping from the staff of CORAF.

We invite you to enjoy this report and circulate it within your networks.

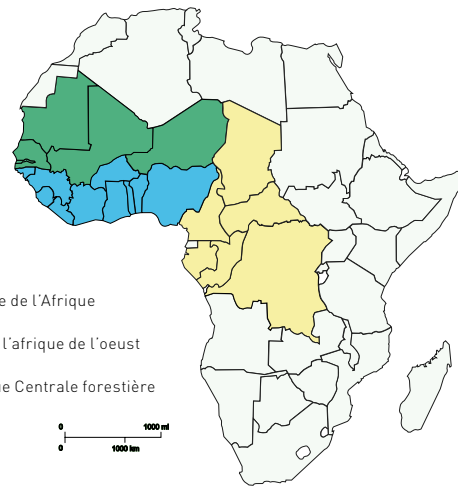
# WHO WE Are



© Photo Shutterstock

The West and Central Africa Council for Agricultural Research and Development, with the acronym, CORAF was originally established in 1987 as a Conference of Heads of African and French Agronomic Research Institutions. CORAF's membership has expanded since 1995 and presently includes 23 National Agricultural Research Systems (NARS) of the following West and Central Africa (WCA) countries: Benin, Burkina Faso, Cameroon, Cape Verde, Central African Republic, Chad, Congo, Côte d'Ivoire, Democratic Republic of Congo, Gabon, The Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Sao Tomé & Principe, Senegal, Sierra Leone, and Togo.

CORAF intervenes in these 23 WCA countries, covering a total land area of 12.3 million km<sup>2</sup>, with a total population of 433.2 million inhabitants out of which 74 % are engaged in agriculture. The diversity of agricultural commodities in these countries provides opportunities for improvement in national food and nutritional security, domestic incomes and local trade expansion. The demand for food in WCA, especially in the growing urban centers, is projected to increase from about 60% to 80% by 2050, although agricultural yields are not keeping pace with the increasing demands. Competitiveness for food and agricultural products in the global market has led to increased exposure of WCA farmers to high produce quality, world market prices, and pressure for competitive prices. The "new agriculture", including family farming and organic farming, is expected to improve access to markets and global agri-food value chains through local and regional traders, small and medium-scale (agribusinesses) enterprises (SMEs), as well as agro-processors



**Vision**

Prosperity and food and nutrition security in West and Central Africa

**Mission**

Sustainable improvements to the productivity, competitiveness and markets of the agricultural system in West and Central Africa

**Our Work**

<b>11</b> Regional Projects coordinated	<b>03</b> New Regional Projects Launched	<b>15</b> USD Million Raised from USAID	<b>4,468</b> USD Million Raised from the Additional Financing of WAAPP IC
<b>417.939</b> USD			Reserve Fund



# Our 2017 Milestones and Successes

- Positioning CORAF as a key regional player in the agricultural transformation in WCA with key strategic documents for the next ten years.
- Facilitating the production of 54 tons of breeder seeds (34% of regional supply), 1,010 tons of foundation seeds (13% of regional supply), and 11,694 tons of certified seeds, thanks to the WASP PPP model.
- Increasing the performance of WAAPP with 750,000 people directly benefitting from WAAPP (of which 41% are women), more than 700,000 farmers adopting new technologies, and 2 National Center of Specialization (Dry Cereals and Root & Tuber) satisfying conditions to be upgraded into Regional Centers of Excellence.
- Enhancing knowledge on breeding and phenotypic characteristics of the Ndama bovine breeds of Senegal and Côte d'Ivoire, thanks to the UEMOA supported project. Building capacity of NARS (Sierra Leone, Liberia, Chad and DRC) with 12 out of 28 students completing their MSc. and PhD thesis, thanks to IDRC's support.
- Developing environmentally sound control techniques (IPM, Biological control) for fruit fly pests, thanks to the EU funded project (PLMF).
- Improving financial stability by increasing resource mobilization and expanding partnerships:
  - **USD 15,0 million** funding from USAID for a new 5 years-program entitled "Partnership for Agricultural Research, Education and Development" (PAIRED);
  - **USD 4,468 million** from the Additional Financing for WAAPP 1C to scale up adoption of technologies in Benin, Guinea, Niger and Togo;
  - Scaled WAAPP to include Cape Verde and Guinea Bissau; Supported the development of a new program, the "West Africa Agricultural Transformation Program" (WAATP) to scale WAAPP successes in WCA;
- Increasing CORAF's visibility in Central Africa through the coordination of WAATP in Cameroon and Chad.
- Supporting publication of the NCoS scientific manuscripts in *Agronomie Africaine*: Vol 29, No 1 (2017): <https://www.ajol.info/index.php/aga/issue/view/16355>; and in *Agronomie Africaine*: Vol 29, No 2 (2017): [www.ajol.info/index.php/aga/issue/view/16356](http://www.ajol.info/index.php/aga/issue/view/16356).



# 1. Consolidating CORAF as a key regional player in agricultural transformation in WCA

## 1.1. Responding to emerging trends in agriculture in WCA

**A**fter 10 years of implementation of the CORAF Strategic Plan (2007-2016), agricultural and socio-economic development patterns demanded CORAF to comply with new orientations notably, the United Nations Sustainable Development Goals (SDGs), the 2014 Malabo Declaration, and the recommendations of the International Conference on ECOWAP (ECOWAP+10) in 2015. External and internal reviews, mid-term and final evaluations of OP1 (2008-2013) and WAAPP, WASP, MDTF, FTF, DFID, DFAT, and ILWAC programs as well as extensive consultations with stakeholders, highlighted the achievements and lessons learnt that have informed the development in a consultative and inclusive approach, of key strategic documents:

- Second 10-Year Strategic Plan for 2018-2027 (SP2);
- A marketable third Operational Plan for 2018-2022 (OP3);
- Resource Mobilization Plan; and
- Strategy of Communication and Marketing.

## 1.2. Honing our tools for accelerating agricultural transformation in WCA

Based on the multitude of challenges and opportunities faced in agricultural research and development in WCA, CORAF recognizes that it cannot address all of these alone. CORAF will facilitate comprehensive linkages between multiple organizations consisting of local, national, sub-regional, regional, private, public sectors and civil society, to bring about large-scale changes. To achieve the objectives of the CORAF

SP2 (2018-2027), an initial five-year OP3 (2018-2022) was prepared with special attention to the following key issues:

- **Priority setting and planning:**  
Most of the priorities emerged from problems identified and translated into projects (WAAPP, WAATP, PAIRED, Fruit fly, UEMOA projects) to be implemented over the next decade.
- **Project management:**  
Funding for projects will be channeled through commissioned research and competitive grant scheme, mostly to NCoS and RCoEs which have specific research expertise, competence and facilities.
- **Partnership for impact:**  
CORAF will deliver its mandate by developing functional partnerships that leverage expertise and resources
- **Resource mobilization:**  
Implementation of the SP2 (2018-2027) will enhance financial partnership with traditional donors, broaden the donor base and emphasize cooperation with non-traditional development partners, such as China, Israel, Bill and Melinda Gates Foundation, Dangote Foundation, AGRA, and the relevant Private Sector players.
- **Communication and Marketing:**  
Demonstrate to donors, regional and national partners that rooted in WCA, CORAF more than any other institution has an unparalleled experience in providing lasting solutions required to transform the agricultural industry in the sub-region.





© Photo Shutterstock

The CORAF SP2 addresses institutional weaknesses, constraints, opportunities and challenges in adopting IAR4D in the WCA through 3 Priority Intervention Domains<sup>1</sup> (PID), namely: (i) Agriculture, Food, and Nutrition Security, (ii) Policy, Institutions, Markets and Trade, and (iii) Gender, Youth and Social Equity.

These PIDs were identified by stakeholders as the major challenges facing agricultural transformation in WCA. They focus attention on increasing the resilience of households and systems to respond to a wide range of biological, environmental and socio-economic challenges. They are consistent with CAADP Results Framework (“Sustaining the CAADP Momentum - Going for Results and Impact”), the Malabo Declarations goals, the United Nations Sustainable Development Goals (SDGs) and National

Agricultural Policies. Furthermore, they facilitate the establishment of clear linkages between priority programs and deliverables of the RECs policies, particularly National Agriculture, Food and Nutrition Security Investment Programs (NAFNSIP). These development frameworks seek to achieve the objectives of poverty reduction, food and nutrition security through agriculture-led economic growth. To facilitate implementation of the PIDs, three Activity Pillars were defined within this Strategy: These are:

- (i)** Community of practice in scaling up technologies and innovations for impact,
- (ii)** Regional integrated capacity strengthening and coordination, and
- (iii)** Knowledge management, foresight and anticipation

<sup>1</sup> An intervention domain is an activity area (theme) that provides CORAF and its partners with directions on where they can best contribute to development outcomes, and ultimately to the CORAF Specific Objective and to make contributions to its overall goal, the RECs agricultural policies, the AU-NEPAD’s CAADP and Malabo Declaration Goals as well as the new UNs SDGs.

# 10 CORAF'S Main Focus for the Next 10 YEARS

1

Strengthening the institutional and human capacity of the **23 NARS** to provide a conducive environment for effective engagement in **IAR4D**



2

Coordinating and networking of the **NARS** with the **CIGIAR CRPs, AGRA, FARA**; including regional research centers (base centers, poles, centers of excellence) in the Agrifood Research System. The **WASP** consortium model can serve as a source of inspiration.



3

Providing support to the **RECs** and member countries in the conception, design and implementation of regional policies as well as strategies and regional programs for the generation, dissemination and large-scale adoption of technologies.



4

Research into policy, socioeconomics and markets is supported to assist with the development and implementation of policies and strategies in order to increase agricultural growth and development.



5

Promoting youth employment in agriculture through agribusiness sector development and partnering with on-going initiatives like the **AfDB TAAT**, the **AARP** and AGRA initiatives in **WCA**.



6

Linking with universities to optimize research outputs through coaching/mentoring programs for young graduates as well as integrating and sustaining them to progressively replace the ageing research scientists.



7

Knowledge Management, Fore sighting and Anticipation (enhance knowledge sharing and engagement to enable faster technology, innovation and policy development and anticipation in **AR4D**).







## 2. Fostering and extending regional and international cooperation in AR&D

### 2.1 Prompting world-class research cooperation through RCoE

**N**ARS member countries of CORAF are fine tuning an innovative model in agricultural research for development through the National Centers of Specialization (NCoS), which are currently under transformation into Regional Centers of Excellence (RCoE). This model ensures a regional research framework with a common pool of resources and research expertise to better transform ideas into policy, policy into action, and action into results, while fine-tuning technologies and innovations to achieve sustainable impact at scale.

Among the five NCoS assessed in 2017, two have satisfied the criteria for upgrading into RCoE (Roots & Tubers in Ghana and Dry Cereals in Senegal). CORAF will make an official recommendation to ECOWAS in 2018 for these two institutions to be recognized as ECOWAS Agricultural Regional Center of Excellence.

### 2.2 Expanding partnerships and scientific cooperation

During 2017, CORAF pursued the implementation of the OP2 (2014-2018) with relentless efforts in the mobilization of resources through various advocacy missions with partners.

#### 2.2.1 CORAF-USAID: Bringing the partnership to a higher level

##### **Winning a US\$ 15 million five-year USAID supported program:**

CORAF devoted efforts in 2017 to develop a winning proposal following a call from the USAID-WA. The winning project is entitled "Partnership for Agricultural Research, Education

and Development" (PAIRED) aims to primarily undertake systemic reforms that will improve the efficiency, effectiveness, and professionalism of CORAF to move the organization towards becoming a stellar instrument for regional coordination of agricultural research, and to put it on a path to financial stability and sustainability. These reforms will result in a solid and resilient organization with a new strategic orientation capable of providing a high-quality, demand-led core service package.

##### **Building the agri-inputs regional strategy with IFDC:**

A delegation from USAID visited CORAF to support the collaboration between CORAF and IFDC on agri-inputs regional strategy aimed at increasing the use of quality agri-inputs in the region. CORAF in collaboration with IFDC, AGRA, together with private and public-sector partners, is pursuing the development of models based on empirical data for packaging seeds and fertilizers to increase their marketability, particularly among small scale farmers in rural communities.

#### 2.2.2 Realizing the African Science Agenda in Agriculture (S3A) with FARA

The Science Agenda for Agriculture in Africa (S3A) led by FARA was launched in 2014 in Johannesburg. The S3A is the game changer for the continent's agricultural transformation agenda. Its implementation within the countries is anticipated to create a favorable policy environment for Science, enhance capacity strengthening mechanisms, promote financing arrangements and support innovative platforms in advancing agricultural transformation.

In July 2017, CORAF and FARA supported the Government of Ghana and Senegal in the national S3A meetings in Accra (Ghana) and Dakar

(Senegal), respectively to identify key activities, design the Result Framework and the Theory of Change. CORAF also provided support through its involvement in a collaborative research activity with IFPRI under the CAADP and CGIAR alignment activities of the S3A. In this regard, CORAF carried out the country case study on New Rice for Africa (NERICA) in Senegal. This study under the partnership with IFPRI resulted in the predictions of the potential economic benefits of NERICA adoption in the Casamance region and South of the Sine Saloum region in Senegal.

### 2.2.3 Teaming up with African Union for enhanced Animal Genetic Resource management and use

In September 2007, the international economic committee, convened by FAO, organized the first Global Action Plan (GAP) for Animal Genetic Resources (AnGR) in Interleken, Switzerland. The ensuing plan highlighted 23 strategic priorities and aims to combat the erosion of animal genetic diversity and to sustainably use AnGR for food and agriculture. One of these priorities is the establishment of an AnGR Regional Focal Point (RFP) in each continent. In Africa, the RFP was established as the Inter African Bureau of Animal Genetic Resources of the African Union (AU-IBAR). The African RFP is gradually building five (5) Sub-regional RFP (S-RFP) for Central Africa, North Africa, East Africa, Southern Africa and West Africa. In West Africa, the S-RFP includes a General Assembly composed of AnGR National Coordinators, a Steering Committee (SC) chaired by the ECOWAS Commission and the Secretariat hosted by CORAF.

### 2.2.4 CORAF and IITA join forces to rapidly transform agriculture in WCA

IITA is the main implementing agency of the Technologies for Africa's Agricultural Transformation (TAAT), an ambitious new technologies' adoption program in Africa funded by the African Development Bank (AfDB), while CORAF is the main implementing agency of the West Africa Agricultural Transformation Program (WAATP) funded by the World Bank. The transformation of Africa's agriculture is the focus of both organizations. IITA and CGIARs have ready to share technologies that can rapidly transform agriculture under the joint WAATP and TAAT, a solid collaborative working relationship between IITA and CORAF. Both organizations are bringing together

their comparative advantages to maximize impacts and be more effective in the delivery of development results in WCA.

Furthermore, IITA and CORAF signed an agreement in December 2017 to collaborate in controlling aflatoxins associated with several crops (cereals, legumes, vegetables, roots and tubers) and livestock (eggs, milk) and causing adverse impacts on health, food security, and trade sectors. This collaboration will promote the use of "Aflasafe", a biological



© Photo CORAF

product to control Aflatoxins in CILSS member countries. In this regard, CORAF is hosting the IITA Unit for the commercialization of Aflasafe in Senegal and The Gambia and is coordinating an initiative on cereals and legumes contamination.

### 2.2.5 Developing a new era of partnership between China and West Africa

CORAF led a delegation of 22 members from eight (8) WAAPP countries to China in September 2017. The visit was aimed at exposing the members to Chinese expertise in the production and utilization of hybrid seeds, transfer of intensive aquaculture technology and agricultural mechanization along agricultural commodity value chains. The WAAPP delegation met eight businesses which expressed the desire to form a partnership with WAAPP member countries. The Nonghaha Agricultural Machinery Manufacturing particularly indicated its readiness to set up a demonstration center for its agricultural machinery in West Africa. The outcome of this successful mission was the signing of a MoU between the Hebei Academy of Agriculture and Forestry Sciences of China and CORAF.



## 3. New flagship programs to transform agriculture in West and Central Africa

### 3.1 Launching a new Partnerships for Agricultural Research, Education and Development (PAIRED) project

The CORAF-USAID/WA partnership is underpinned by the conviction that regional approaches and interventions are efficient as an added value to national efforts in reaching out to millions of people whose livelihoods depend on agriculture and whose socio-cultural and economic circumstances are similar.

The Partnerships for Agricultural Research, Education and Development (PAIRED) Project, a new USAID support of 15 million USD started in 2017 for a period of 5 years. It has enabled CORAF to develop its second Strategic Plan (2018-2027) and third Operational Plan (2018-2022), together with separate Resource Mobilization, Knowledge Management and Communication and Marketing Plans. PAIRED's objective is to increase agricultural growth, food and nutritional security and poverty reduction in West Africa. The specific objective is to enhance CORAF's institutional and technical leadership in increasing agricultural productivity. This will be achieved through the delivery of three mutually reinforced components: (i) Support for Strengthening CORAF's Institutional Capacity; (ii) Scaling Up Agricultural Technologies; and (iii) Increasing Availability of Quality Agri-Inputs. PAIRED will build on partnerships with various stakeholders along five value chains - Dry cereals, Fruits and Vegetables, Livestock, Rice, and Roots and Tubers) through the designated RCoS with headquarters in Senegal, Burkina Faso, Niger, Mali, and Ghana, respectively.

### 3.2 Scaling technologies in Central Africa through the West Africa Agricultural Transformation Program (WAATP)

The agricultural challenges facing countries across can be tackled effectively by using a regional integration approach. Lessons learned from the implementation of WAAPP demonstrated that a regional approach is essential to achieve the positive results of a "green revolution" in Africa.

The first series of activities in the WAATP will be implemented in the ECOWAS countries (Côte d'Ivoire, Burkina Faso, Ghana, Liberia and Sierra Leone) and ECCAS countries (Cameroon and Chad). It is expected that other countries will join the program in due course to expand the CORAF portfolio. This new initiative seeks to transform the agriculture industry sustainably by scaling up replicable innovations and technologies using ICT tools and geo-mapping. The objective is to accelerate massive adoption of improved technologies, youth job creation and to strengthen enabling conditions for access to regional markets. WAATP will have five components: (i) Strengthening the new model of innovation delivery in West and Central Africa; (ii) Accelerating mass adoption of technologies and job creation; (iii) Policies, markets and institutional strengthening; (iv) Contingent emergency response; and (v) Project management, learning, monitoring and evaluation.



© Photos Shutterstock

## 4. Improving gender equity in R&D to catalyze innovation in West and Central Africa

### 4.1. Gender mainstreaming is taking roots in NARS and regional initiatives

**CORAF** has made considerable contributions towards gender mainstreaming at regional and continental levels through high level gender policy dialogues and partnerships on gender equality in agriculture. This follows CORAF's commitment to a programmatic approach that ensures gender equality and subsequently facilitating access to agricultural resources by women and youth.

CORAF has been part of a continental task force led by IFPRI to assist countries in mainstreaming gender in their National Agricultural Investments Plans (NAIPs). A continental gender strategy for the NAIPs was developed and technical support was provided during the NAIPs Clinic for ECOWAS member countries held in October 2017 in Senegal.

CORAF has also contributed to gender training, as well as development and assessment of the gender action plans in the implementation of the Regional Sahel Pastoralism Support Project (PRAPS, a CILSS regional project) in Niger, Burkina Faso, Mauritania, Chad, Senegal and Mali.

The African Union gender division invited CORAF to participate in the 'Gender is my Campaign' (GIMAC) meeting held in Addis-Ababa in June 2017. This opportunity was cease to share the WAAPP gender strategy and gender responsive technologies with participants. CORAF also shared its expertise on 'Sustainable Food, Agriculture and Natural Resource Management' in the context of climate change. Moreover, in October 2017, CORAF shared its experience in gender

mainstreaming with participants during a consultative meeting with rural women on the AU Gender Strategy organized by FAO in Accra.

To showcase agricultural technologies and innovations generated, a forum was organized on "Women's access to appropriate technologies" in Abidjan (Côte d'Ivoire) in June 2017, in collaboration with IFDC. The forum was attended by key gender focal points in WAAPP member countries, namely Burkina Faso, Benin, Mali, Niger, Nigeria, Senegal, and Côte d'Ivoire. A range of the gender responsive machinery and technologies that have transformed lives of many vulnerable women and youth in West Africa were displayed.



# 30%

Female benefited from MSc and PhD Scholarships under **WAAPP**



# 43%

Women beneficiaries if WAAPP with getting closer to parity with men in accessing agricultural productive resources (49%) in some countries as Ivory Coast and Mali



# 43%

Women beneficiaries under MDTF, with women making a difference on adoption of technologies in the IPs

## 4.2. Fostering agribusiness mentality in farming among youth

CORAF is coordinating a project on “Nurturing Enterprising Youth in Agricultural Technologies” (NEYAT) with funding from WAAPP and the Islamic Bank of Development (IsBD). The project is promoting the use of technologies generated by the NCoS among youth and has successfully completed two portfolios on knowledge sharing and web-based channels in previous years.

The first batch of 120 mentees (of which 50% were women) out of 3,000 candidates have been selected and will start a one-year virtual mentorship program in 2018. On the other hand, 40

mentors including 32 scientists and private sector professionals have been selected. In December 2017 about 20 aspiring young agripreneurs attended a pre-forum on ‘ICT in Agribusiness’ (ICT4Ag) in Dakar (Senegal) to examine how ICT can be used to create jobs and income generating activities in the agro-food system in West and Central Africa. In the meantime, the Young Professional for Agricultural Development (YPARD) a network of youth in Africa has been invited to submit a proposal through CORAF’s competitive grant scheme with possible funding under WAAPP.



© Photo CORAF

Grace-Marlene **GNINTOUNGBE**



### WHEN ORGANIC MEETS SMART-FARMING

**G**race-Marlene Gnintoungbe, a CORAF mentee, is a young agripreneur from Benin. Her business focuses on the development of an organic farm in Benin.

Since 2015, she has set up market-oriented gardening that is purely organic. She’s going “organic” because she believes that the protection of the environment should be a top priority for farmers.

Grace-Marlène’s garden is located at Glo Djigbé in the department of Atlantique. She’s developing her enterprise to effectively capitalize on ICT. She is particularly interested in post-harvest activities related to processing, labeling, and marketing.

Grace-Marlène participated in CORAF’s Information and Communication Technologies in Agriculture (ICT4Ag) forum, where she shared her experience of waking up from her ICT slumber. Grace-Marlène wants to demonstrate to other young people that it is possible to live a decent life as a farmer while contributing to the community.

“I consider my participation at the NEYAT forum very important because I’ve acquired new knowledge and innovative management tools on how to use the internet to boost my business, ensure better financial management, and create visibility,” Grace-Marlène says.

She will like CORAF and partners to support her through the development of a mobile remote irrigation app, as well as facilitating access to favourable funding opportunities.

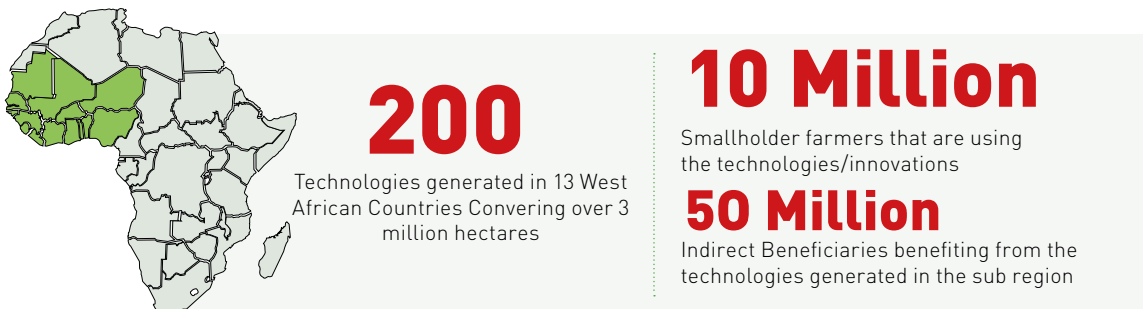




## 5. Bridging the gap to new technologies for small holder farmers in WCA

### 5.1 Sustaining and scaling up adoption of technologies in WA

WAAPP was initially conceived as a ten-year horizontal and vertical Adaptive Program Lending (APL) with two phases of 5 years each. Out of 13 countries, only Mali, Senegal and Ghana completed the first and second phases. The first phase for the other 10 countries was closed on December 31, 2016. However, the WB approved Additional Financing (AF) in order to consolidate and extend the program's promising achievements for another 2 years in Benin, Guinea, Niger and Togo. During 2017, outputs from WAAPP initiatives continued to spread across the region. CORAF also provided support to WAAPP Mali and Niger in evaluating the impact of the program in the respective countries. CORAF is also supporting preliminary preparations on the development of the follow up WAAPP.



**45%**  
**Female smallholder farmers**  
Have better access to agricultural resources.



**30%**  
**Average yield increase**  
For improved varieties of millet, sorghum, maize and fonio.



**34%**  
**Average income increase**  
For smallholder farmers in the 13 West African countries



**28% - 55%**  
**Average yield increase**  
For improved varieties of millet, sorghum, maize and fonio.

## WAAPP ACHIEVEMENT OVER THE PAST 8 YEARS

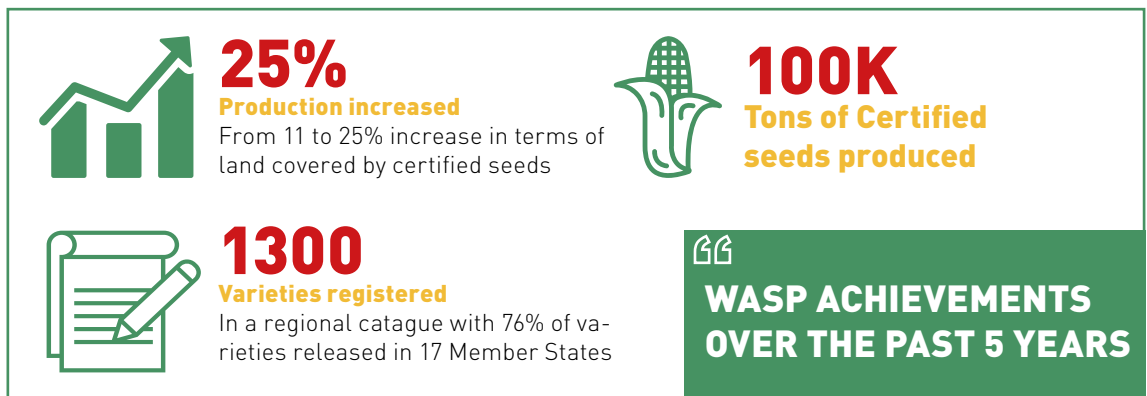
## 5.2 Capitalizing on achievements in the seed industry in WA

WAAPP in partnership with the USAID/West Africa Mission through WASP organized a two-day learning event in June 2017 in Accra (Ghana) to share lessons learned on the implementation of the WASP, with a broad range of the seed value chain stakeholders.

Participants lauded the models initiated by WASP in the regional seed resilience, the business model and the seed demand forecasting tool, and recommended upscaling them across the West Africa region. The use of innovative information and communication approaches will be vital in upscaling successful models together with the sharing of vital experiences among stakeholders and partners. Stakeholders' need for information

is enormous. In this regard, a section was devoted to ICT approaches.

The Learning Event recommended the following: (i) incorporating other crops in a future program, (ii) widening the responsibility for the seed certification process by tapping on the advantages that the private sector possesses, and (iii) injecting more entrepreneurial dimensions into the seed sector, strengthen the access and use of instructional credit, including the institution of viable national seed development fund schemes and credit guarantee arrangements.



## 5.3 Animal and aquaculture genetic resources in West Africa

The project «Valorization of local animal and aquaculture genetic resources (PROGEVAL) in the UEMOA zone, is one of the two UEMOA supported projects coordinated by CORAF. It is a game changer in the sustainable valorization of local animal genetic resources (Zebu cattle, Ndama

taurin, sheep, guinea fowl) and aquaculture (Tilapia and catfish) with the aim of ensuring food security and increasing the income of producers in Burkina Faso, Côte d'Ivoire, Guinea Bissau, Niger and Senegal. Key results achieved during 2017 are as follows:



Breeding practices and phenotypic characteristics of the **Ndama bovine breeds** identified



Female tilapia **XY** identified and progeny testing that gave <sup>3/4</sup> males in its progeny with potentially **25% YY males**.



The technique of early genotyping using a combination of specific chromosomal markers was successfully transferred to the **UPB/CIRDES** laboratories

## 5.4 Towards effective management of the dreadful fruit fly in West Africa

Plans for controlling and managing fruit flies in West Africa (PLMF) were initiated by ECOWAS and UEMOA and funded by the European Union and the French Agency for Development (AFD). CORAF is coordinating the “Applied Research Component” of the project, focusing on existing research and development programs for improved surveillance and technologies to control the flies.

This component is implemented in Benin, Burkina Faso, Côte d'Ivoire, The Gambia, Ghana, Guinea, Mali and Senegal. Recently<sup>2</sup> Guinea Bissau, Nigeria and Togo were added to the implementing countries. The project aims at improving income of stakeholders in the fruits and vegetables value chain in WA, and to contribute to food security and poverty reduction. Key results are:



13 Species of fruit flies identified as the most damageable to tree fruits in **ECOWAS** zone with a pre-dominance of one specie, *Bactrocera dorsalis*



Combination of Orchards of **GF-120**, a commercial food baits, Para pheromones, local and commercial food baits and natural plants leads to about **80%**



Biological control techniques using parasitoids, predators or pathogens were also demonstrated

<sup>2</sup>A decision was made by the Steering Committee of the Project in its meeting held in September 2016 at Lomé to include Guinea Bissau, Niger and Togo as members of the Project



## 6. Strengthening capacity for rapid agricultural transformation in WCA

### 6.1. Channeling Israeli experience to transform West African agriculture

Following a previous ECOWAS mission to Israel in December 2016, a tailor-made training program on the linkage between Applied Research, Extension and the Farmer was organized in September 2017 by Israel's Agency for International Development Cooperation (MASHAV) in Tel Aviv and was attended by 20 ECOWAS's professionals.



Key lessons learnt by the participants were: (i) Israel agriculture is niche market driven using "Fork to farm" approach to respond to consumers' demands for high quality, safe and healthy foods, at reasonable prices while maintaining a sustainable production environment; (ii) just like West Africa, Israel found that the old linear model of technology transfer (from scientists to the users) was outdated and should be replaced by an interactive model of networking systems, which integrate knowledge, production, adaptation, advice and education.

The annual knowledge sharing workshop between Israel and the West Africa research and development stakeholders is planned to be organized in 2018 in Cape Verde on agricultural and water management.

### 6.2. Grooming the agricultural research workforce and competencies

Capacity for Agricultural Research for Development (C4R4D) initiative in Sub-Saharan Africa is a response to the challenges in developing human research capacity in WCA. The project is funded by IDRC, managed by CORAF and implemented by IITA. Out of 28 students (8 MSc and 20 PhD) from four countries (Chad, Democratic Republic of Congo, Sierra Leone and Togo) supported by this initiative, 6 have already submitted their thesis (3 from Chad, 2 from Togo, and 1 from Congo). The high participation of women (12 out of 28) has encouraged other women to undertake tertiary education especially at MSc and PhD levels. At scale, this will result in a better representation of women scientists in AR4D. It has also provided a model of partnership between a funding agency, CORAF and a CGIAR center to support students in the tertiary education in WCA.

### 6.3. Addressing the capacity and productivity constraints on Maize, Cotton and Livestock value chains

The West African Economic and Monetary Union (UEMOA) is providing 1.5 Billion CFA for the period 2014-2019 to support CORAF in improving the productivity and competitiveness of five commodities/sectors (maize, cotton, livestock-meat, poultry and aquaculture), with a view to ensuring food security and improving the standards of living of the population. During 2017, key achievements were as follows:

- A total of 162 people benefited from short-term trainings on (i) aquaculture practices, (ii) sheep and poultry breeding.
- Method developed by CIRAD to analyze production and reproduction performance of a herd within a period of 12 months.
- Technical capacity of members of the innovation platforms (IPs) on guinea fowl in Dori (Burkina Faso) was strengthened by the supply of a brooder with a capacity of laying 352 eggs per brooding cycle.
- Six (6) MSc students (2 females) were supported by the project on specific issues related to local livestock and aquaculture genetic resources. A total of 29 students (23 MSc, 2 PhD in Vet, 1 Design Engineer and 3 PhD) are under supervision within the PROGEVAL project.
- Six (6) functional IPs on the management of Animal genetic resource and Aquaculture were established. These include two on fish value chain in Côte d'Ivoire, one on livestock/meat value chains in Niger, one on guinea fowl in Burkina Faso and one on livestock/meat and small ruminants in Senegal. About 243 IP members (14% of women) benefited from the project activities.



## 7. Administration and Finance

### 7.1. Human and talent mobilization by CORAF

The year under review was marked by a serious shortage of personnel at the CORAF Executive Secretariat (ES) this was mainly due to the phasing out of the MDTF and WAAPP programs that funded the bulk of staff salaries. While laying a foundation for a more sustainable funding mechanism, management with the support of USAID through AfricaLead and USAID-ASSESS engaged consultants who helped in developing and/or strengthening key departments including contract management, communication and marketing system, project management and resource mobilization, as well as the consultative processes for reinforcing strategic partnerships.

The ES is increasingly drawing from the pool of expertise of its wider NARS system across the region. In this regard, a growing number of NARS members are representing the organization at meetings and workshops both within and outside the region. By the end of 2017, the ES had a total of 27 staff members (12 core and 15 project based). Moreover, engaging Young Professionals and Associate Program Fellows, is providing these young people valuable work experience while looking out for very promising ones who could champion CORAF interests like supporting project implementation in their countries. This engagement is turning out to be a win-win situation in nurturing talent and providing job opportunities while ensuring widespread ownership of the organization as well as ensuring a sustainable organization.

### 7.2. Resource mobilization by CORAF

The year under review marked a formidable resolve for expanding partnerships, diversifying resource mobilization efforts and the initiation of a reserve fund. CORAF therefore made initial gains in acquiring (i) USD 15,0 million funding from USAID for a new 5 years-program entitled "Partnership for Agricultural Research, Education and Development" (PAIRED); and (ii) USD 4,468 million from the Additional Financing for WAAPP 1C to scale up technologies in Benin, Guinea, Niger and Togo. Despite all the difficulties related to the gradual reduction of financial resources in 2017, a rigorous management policy was set up to ensure the proper closure of relevant projects in order to guarantee the credibility and the image of the institution (Table 1).

The advocacy by CORAF for sustained funding of agricultural research contributed significantly to the World Bank engaging countries in the CORAF region to develop a new program called the 'West Africa Agricultural Transformation Program', that will scale up WAAPP achievements. This program unlike WAAP will extend to additional countries in West Africa (Cape Verde and Guinea Bissau), as well as Cameroon and Chad in Central Africa. Through its coordination role, CORAF is expected to benefit a total of about USD 20 million as institutional for a period of five years. By the end of 2017, CORAF had built a reserve of USD 417,939 generated through project management charges.

Financial Partners	Project life time (Years(s))	Amount in Agreement (USD)		Expenditure and Commitment - USD		Balance as at October 30, 2017 USD		Signing Year	Closing date
		Amount allocated to projects	Amount allocated for coordination and regional activities	Expenditure/ projects	Expenditure/Regional Coordination	Balance/ Project Budgets	Balance/ Regional Coordination budget		
<b>WAAP/WB 2A</b>	5	7 027 168	6 074 325	4 456 880	6 056 467	2 570 288	17 858	2012	31/12/2017
<b>WAAPP/WB 1C Fonds Add.</b>	2	2 492 637	2 575 705	-	205 553	2 492 637	2 370 151	2017	31/12/2019
<b>USAID/PAIRED</b>	5	6 865 149	8 134 851		10 696	6 865 149	8 124 155	2017	19/06/2022
<b>CEDEAO (Fruit flies)</b>	5	2 951 807	-	1 295 067	130 643	1 656 740	-130 643	2014	18/12/2017
<b>CRDI/DKAR</b>	3	536 064	32 164	409 099	16 325	126 965	15 839	2015	30/06/2018
<b>UEMOA</b>	3	2 700 000	300 000	1 566 595	161 918	1 133 405	138 082	2014	31/12/2017
<b>AU BIRA</b>	2	-	78 720	-	412		78 308	2016	31/03/2018
<b>IsDB</b>	1	-	140 000	-	2 586		137 414	2016	
<b>FAO</b>	1		40 000	-			40 000		31/07/2018
<b>Balance on the agreements signed on 31/10/2017</b>						<b>14 845 184</b>	<b>109 165</b>		



## 8. Challenges and lessons learned

2017 was marked by the phasing out of key programs with their funding resulting in considerable depletion of staff supported by those funding streams. The Directorate of Programs was hardest hit. By the end of the year the WASP Chief of Party was acting as Director of Programs (DP) following the departure of the then acting DP. The period also witnessed the end of contract of the Crops Program Manager as well as the Planning and M&E Officers. The departure of key personnel prevented CORAF from adequately engaging the numerous calls particularly meetings and other strategic consultations with a variety of partners.

However, various coping strategies were developed by the ES to address this challenge. These included technical assistance by developing partners and NARS, internship by young professionals, consultancies and interim positions filled by former staff members. The major lesson learnt is that the ES can operate with a small number of core staff, but rely on its wider membership, projects staff, Young Professionals and Associate Program Fellows to effectively engage with partners and implement activities across the region.

## 9. Conclusion and perspectives

### 9.1. Conclusion

The various external evaluation teams identified key factors that hindered CORAF's performance and formulated critical and helpful recommendations for the Institution. These informed the development of the strategic documents (Second Strategic Plan, Operational Plan, Resource Mobilization, and Communication and Marketing Strategies). The year 2017 was marked by satisfactory performance evaluations of CORAF by funding partners and an extensive resource mobilization which resulted in the approval of the PAIRED project by USAID/WA and the Additional Financing of WAAPP by the World Bank.

All programs, old and new, achieved quality results which were shared with stakeholders. The impressive achievements in seed production in 2017 are a result of the demand created by the promotional activities undertaken by CORAF and its constituents. Appreciable access to credit facilities was possible in some countries like Burkina Faso and Nigeria, as well as the Presidential initiatives to boost rice production. The business environment created by WASP and the effective use of the seed forecasting tool and ASIWA platforms also contributed towards increasing demand for seed. CORAF under WASP and WAAPP contributed immensely to the promotion of the Regional Seed Regulation through various strategic meetings and events.

CORAF participated in high level consultation meetings and established strategic alliances with key stakeholders in research and agricultural development, both inside and outside its mandate region of West and Central Africa. CORAF succeeded in increasing its visibility in Central Africa by supporting Cameroon and Chad in their integration into the new WAATP. The Institution continues to ensure regional leadership in improving agriculture research, technology generation, dissemination and adoption, empowerment of actors and knowledge management among its stakeholders. A new era for CORAF under the leadership of a new Executive Director has given a new impetus to the Institution and raised hopes and expectations among the staff and partners.

### 9.2. Perspectives

The recruitment of a new Director of Research and Innovation at the end of 2017 will give a new push to the quality of programs, project development and results delivery. CORAF is planning to make an official request in 2018 to ECOWAS for the up-grading of the two NCOS - Roots & Tubers and Dry Cereals- that have satisfied criteria for their upgrading into RCoE, as ECOWAS Agricultural Regional Center of Excellence.

CORAF will pursue the implementation of recommendations of external reviewers and partners to improve implementation performance of the new Strategic and Operational Plans. It will continue advocacy with the RECs, development and technical partners to mobilize funds for the implementation of its new Strategic Plan (2018-2027) and its Operational Plan (2018-2022) using the newly developed Resource Mobilization, Communication and Marketing Strategies. The future of CORAF looks brighter.



© Photo CORAF

# ANNEXES

## Annex 1 : References

1. CORAF, 2017. CORAF Strategic Plan (2018 – 2027). Catalyzing Agricultural Innovations for Food and Nutrition Security in West and Central Africa pp 35 + annexes.
2. CORAF, 2017. CORAF Operational Plan (2018 – 2022). Catalyzing Agricultural Innovations for Food and Nutrition Security in West and Central Africa pp 33 + annexes.
3. CORAF, 2017. Partnership for Agricultural Research, Education and Development in West Africa (PAIRED). WorkPlan: Fiscal Year 2018. pp 45.
4. Sous Convention CORAF/UA-BIRA pour la mise en œuvre du projet sur le renforcement de capacité des pays africains sur la conservation et l'utilisation des ressources génétiques animales; Rapport annuel 2017; 5 pp.
5. Description du Plan de travail et budget annuels (PTBA) 2018, CORAF, November 2017; 22 p.
6. InfoCom contribution to the Annual Report 2017; 6 P.
7. CORAF's Strategy for Resource Mobilization. 10 p +annexes
8. WASP Completion Technical Report (1st August 2012 – 31st October, 2017); Submitted to USAID/ WA By CORAF. 52 p + appendices
9. Implementation Report of the 2017 AWPB (May-October 2017). Submitted to WAAPP support mission; 33 p + annexes
10. CORAF's Communications and Marketing Strategy; 22 p + annexes.
11. CORAF Technical and Programs Implementation Report; Period covered: December 2016 – November 2017, Submitted to the 24th Ordinary Session of the Governing Board, 28 - 30 November 2017 - Dakar, Senegal
12. Support Project to the Regional Plan for Fruit Flies Monitoring and Control in West Africa; Annual Report (August 2016-June 2017); 21 p.
13. Partnership for Agricultural Research and Education Development (Cooperative Agreement AID-624-A-17-00002); Half-Year Report, January 2018; 21 p.
14. Convention pour la mise en œuvre des programmes prioritaires de recherche dans l'espace UE-MOA ; Rapport annuel, 33 p.
15. Capacity for Agricultural Research for Development (C4R4D) in Sub-Saharan Africa Third Progress Report 02nd January – 31st December 2017; 13 p + Annexes.

## Annex 2: Scientific Production of NCoS in the journal *Agronomie Africaine*: Vol 29, No 1 (2017)

1. D. Coulibaly, A. Ba, B Dembele, F. Sissoko. Developpement des systemes de production innovants d'association maïs/legumineuses dans la zone subhumide du Mali ; pp 1-10.
2. O. Goita, K Traore, B Diwara, M.M. Coulibaly, M.K. N'diaye, S.S. Guindo, D Timbely, D Sako Etude de l'effet de la date de semis et de l'age des plantules au repiquage sur le rendement de trois varietes de riz adoptees dans les perimetres irrigues villageois des regions de Tombouctou et de Gao; pp 11-17.
3. H.I. Oumarou, B. Soumana, A. Toulou, B. Yamba Evaluation des rendements en graines et fanes des varietes ameliorees et locales de niebe [*Vigna unguiculata* (L.) Walp.] en champ ecole et en champ de multiplication de semences a Karma (Niger) ; pp 19-27.
4. S. Kroma, N Lamien Evaluation de la rentabilite et de la competitivite de la chaîne de valeur gomme arabique dans l'amélioration des conditions de vie des populations au Sahel du Burkina Faso; pp 29-40.
5. S.S. Harding, N Mahmood, J.M.K. Cherrnor Sullayk, A. Toure Assessing the suitability and profitability of the system of rice intensification (SRI) methodology under farmers' circumstances in Sierra Leone; pp 41-52.



6. S. Sidibe, A. Coulibaly, D. Kone, M. Doumbia Amélioration de la viscosité et de la densité énergétique des bouillies infantiles préparées à partir de farines composées à base de riz, de niébé, de soja et d'arachide; pp 53-61.
7. M Sambe, L.S. Tounkara, M.F.J.S. Lopy, Y. N'diaye Etude des comportements rhéologiques des mélanges de farine blé/sorgho sans tanins issue de trois nouvelles variétés cultivées au Sénégal et mise au point de pains à base de farines composées (blé/sorgho) ; pp 63-68.
8. C Beye, S. Hiligsmann, L.S. Tounkara, P. Thonart Anthocyanin content of two Hibiscus sabdariffa cultivars grown in Senegal; pp 69-74.
9. S. Sidibe Qualite de conservation des farines de complément, du djouka et du couscous aux feuilles d'épinard et d'amarante; pp 75-82.
10. M. Yisa, S.O. Olufeagba, M. Iwalewa, S.S. Gabriel, O.M. Olowosegun, M.I. Goni, D.C. Nwangwu Improving growth performance of fingerlings of *Clarias anguillaris* through intraspecific hybridization; pp 83-89.
11. F. Olayemi, S. Oyewole, M. Omodara, A. Ade, C. Adetunji, F. Omopariolaand, P. Olufemi Development of effective drying technology for quality enhancement of whittings fish (*Merlangius merlangius*); pp 91-98.

### **Annex 3: Scientific Production of NCoS in the journal *Agronomie Africaine*: Vol 29, No 2 (2017)**

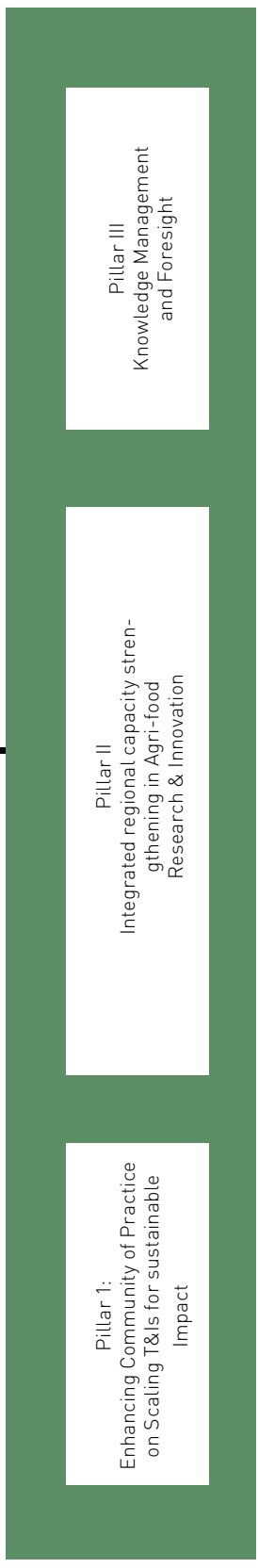
1. M.M. Rabe, I.B. Baoua, L. Sitou, L. Amadou. Champ école paysan, une approche participative pour l'amélioration du rendement du niébé: résultats d'expériences pilotes conduites dans les régions de Maradi et Zinder au Niger ; pp 1-9.
2. B. Tangara, M. Dicko, M. Camara, N. Kamissoko Evaluation d'alternatives d'économie d'eau dans les systèmes de double riziculture irriguée à l'office du Niger (Mali) ; pp11-22.
3. E. H. Gnagne, P.M.T. Akely, J. Petit, J Scher, G Amani Physicochemical characterization of 3 cultivated Ivorian plantain commonly used for making local dishes such Foutou and Foufou; pp 23-36.
4. L.S. Tounkara, M.S. Sow, C Beye, A.F. Ly, M Sambe, Y Ndiaye, M.A. Seck Fortification des farines tropicales par l'introduction de proteines vegetales et de champignons comestibles; pp 38-45.
5. A.A. Adeola, T.A. Shittau, O.O. Onabanjo, O.O. Oladunmoye, A. Abass Evaluation of nutrient composition, functional and sensory attributes of sorghum, pigeonpea and soybean flour blends as complementary food in Nigeria; pp47-59
6. B Kone, A. Traore, D. Coulibaly, M. Harvard, J.F. Belieres Variabilité des productions et des revenus des exploitations agricoles familiales en zone cotonnière du Mali; pp 59-68.
7. E.D. Owusu, S.A. Ennin, P.P. Acheampong Integrated soil nutrient management option for sustainable yam production; 69-81.
8. C Thiaw, T. Brevault, N.F. Diallo, A. Sow, D Ngom, V. Soti, I Sarr, G.S. Dorego, M. Diop, N Cisse, M Sembene Incidence et régulation naturelle de la chenille mineuse de l'épi de mil, *Heliocheilus albipunctella* de joannis (Lepidoptera, Noctuidae) à Bambey dans le bassin arachidier au Sénégal; pp 83-95.
9. L. Gangbe, A. Chikou, H. Agadjihouede, R Houedjissin, G.A. Mensah, PH Laleye Structure de taille et fécondité de *Macrobrachium vollenhovenii* (Herklots, 1857), crevette géante d'eau douce du moyen delta de l'Oueme au Sud-Benin ; pp 97-107.
10. M Iwalewa, Akinwale Akinwale, MM Adewole, E. Okhiria, B Ebonwu, E.B. Iheanacho, O.C. Bede Improving breeding performance of fingerlings of *Clarias gariepinus* through intraspecific hybridization; pp 109-114.
11. M. Harouna, PH Kone, H. Adakal, A. Haido, Z. Bengaly, B. Souley Etude de la trypanosomose bovine dans les départements de Say et Torodi (Niger) ; pp 115-124.
12. G. Sanou, D Dakouo, I. Ouedraogo Influence du système de riziculture intensif (SRI) sur les attaques des principaux insectes déprédateurs dans les périmètres rizicoles irrigués de Karfiguela et de la vallée du Kou au Burkina Faso; pp 125-136.
13. M. Bagayoko, G. Traore, O. Samake Variabilité spatiale des rendements du riz en en systeme de riziculture intensive (SRI) en zone office du Niger au Mali; pp 137-147.
14. M. Bagayoko, B. Tangara, M. Dicko, G. Traore Utilisation du semoir philippin, une alternative au repiquage du riz irrigué en zone office du Niger; pp 149-157.

## Annex 4: New projects and study initiated in 2017

Project title/Program	Amount USD	Objective	Start Date	End Date	Partners	Countries
Sustainable increase in agricultural productivity through integrated management of organic fertilizers in West Africa – FERTORAO	<b>615,092</b>	To contribute to sustainable food security in West Africa with the specific objective of determining the technical and economic performance of the use of organic fertilizers to make recommendations	March 2017	March 2019	Regional WAAAPP	Côte d'Ivoire, Burkina Faso, Ghana, Mali, Nigeria and Senegal
Partnerships for agricultural research, education and development" (PAIRED)	<b>15 000 000</b>	To increase agricultural growth, food and nutritional security and poverty reduction in West (and Central) Africa	June 2017	June 2022	USAID/WA	All ECOWAS countries except The Gambia and Bissau Guinea
Capacitating stakeholders in using climate information for enhanced resilience in the agricultural sector in West Africa (CaSCIERA-WA)	<b>3 216 649</b>	To capitalize and put into use, in a participatory manner, existing approaches to support farmers and local communities to plan their livelihood activities, which go beyond agriculture	July 2017	July 2019	WAAAPP, CCAFS, ICRAF, AGRHYMET	Mali, Benin, Guinea, Niger and Togo
Assessing the impact of the adoption of the maize improved varieties on maize farmers' welfare (study)	<b>72 727</b>	To improve knowledge on how the adoption of improved maize varieties is contributing to increase farmers' welfare in the target countries	March 2017	December 2017	UEMOA	Benin, Burkina Faso, Côte d'Ivoire and Mali

**General Objective:** High broad-based agricultural growth sustainably increased in WCA

**Specific Objective:** Agricultural productivity, competitiveness, and markets sustainably improved for target groups in WCA







CORAF (Conseil Ouest et Centre Africain pour la Recherche et le  
Développement  
Agricoles / West and Central African Council for Agricultural Research for  
Development)

---

7 Avenue Bourguiba  
B.P. 48, cp 18523, Dakar, Senegal  
Tel: +221-338699618  
Email: [secoraf@coraf.org](mailto:secoraf@coraf.org)  
Website: [www.coraf.org](http://www.coraf.org)

---

**Acknowledgement:**

Concept & Editing  
David Akana

Graphic Design & Layout  
Jimmy Glorial MANDABRANDJA