



FEASIBILITY STUDY FOR THE DEVELOPMENT OF PUBLIC-PRIVATE SEED DELIVERY SYSTEMS IN IVORY COAST



STUDY ON EXISTING SEED SYSTEMS AND THEIR POTENTIAL FOR IMPROVEMENT IN COTE D'IVOIRE

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TABLE OF CONTENTS

| | |
|--|-----------|
| 1. Introduction and Background | 8 |
| Background and Rationale..... | 8 |
| at. Farming Systems..... | 9 |
| b. Current and recent agricultural development initiatives | 10 |
| b.1. Implementation of Country Strategy Paper (CSP) 2013-2017 | 10 |
| b.2. The National Development Plan (NDP) 2016-2020 | 11 |
| b.3. The Development Poles..... | 12 |
| vs. Development prospects for agriculture | 12 |
| 2. Farming Systems | 13 |
| at. Levels of current production of food crops, yields and trends | 13 |
| b. Description of the main agro-ecological zones and farming systems..... | 14 |
| vs. Current status of agricultural extension activities, public and private | 15 |
| c.1. At the public level | 15 |
| c.2. The private level..... | 16 |
| d. adoption of improved seed level, Culture | 16 |
| e. Level of use of fertilizers and organic manure to increase yields by crop | 16 |
| f. General description of the marketing system of excess production of staple crops..... | 18 |
| g. Trends in the development of industries and sales channels for staple crops | 19 |
| 3. National Agricultural Research System | 20 |
| at. public institutes and universities actively engaged in plant breeding | 20 |
| b. Current situation of recent or ongoing varietal selection by species..... | 21 |
| vs. State of the art of seed research institutions to public vocation..... | 24 |
| - Scientific staff | 24 |
| - infrastructure..... | 25 |
| d. Recent collaborations or underway with the private sector and farmers' organizations seed supply material | 25 |
| e. Current status of seed production license agreements by third parties..... | 26 |
| 4. Inventory of seed supply and supply | 26 |
| at. History of varietal selection and seed supply in the country | 26 |
| b. Recent and ongoing activities aimed at the dissemination of improved crop varieties, by crop | 29 |
| vs. Recent and ongoing activities aimed at increasing the country's seed capital..... | 29 |
| d. Current options for smallholders to access improved and certified seeds..... | 30 |
| e. Number of private seed companies operating in the country and an annual quantitative estimate of their seed production..... | 33 |

| | | |
|-----------|---|-----------|
| f. | Non-governmental organizations and farmers' organizations involved in the production and supply of seeds..... | 34 |
| f.1. | Formally recognized agricultural seed-producing cooperatives..... | 34 |
| f.2. | The four (4) best structured seed producer cooperatives..... | 36 |
| g. | Existing infrastructure for seed treatment and conditioning..... | 40 |
| h. | Quantity of certified seeds marketed during the last five years, by crop..... | 40 |
| i. | Number of small and medium-sized enterprises operating in the agricultural / seed sector currently in operation, by region..... | 40 |
| j. | Import level of certified seeds, by crop..... | 40 |
| k. | Prospects for improving the seed sector..... | 41 |
| 5. | National strategic plan for the seed sector..... | 41 |
| at. | Administrative formalities for seed production..... | 41 |
| b. | Administrative formalities for the registration of new varieties..... | 41 |
| vs. | Administrative formalities for the certification of new varieties..... | 42 |
| c.1. | Definitions:..... | 42 |
| c.2. | The process :..... | 43 |
| d. | Inventory of bodies responsible for the regulation and certification of new varieties..... | 45 |
| - | Staff..... | 45 |
| - | infrastructure..... | 45 |
| e. | Inventory of basic seeds..... | 45 |
| f. | Procedures for the production and supply of basic seeds..... | 46 |
| - | Access of private seed companies to basic seeds..... | 46 |
| - | Policies in place for the provision of basic seeds by the private sector..... | 46 |
| 6. | Summary and conclusions..... | 46 |
| at. | Current state of access to improved seeds among smallholders..... | 46 |
| b. | Government contribution and support for the improvement of seed systems..... | 46 |
| vs. | Prospects and opportunities for improving seed systems..... | 47 |
| d. | Recommendations..... | 47 |
| e. | Impacts and spin-offs of better access of smallholders to improved seeds..... | 48 |
| | REFERENCES..... | 51 |

LIST OF PAINTINGS

Table 1 : Main crops, areas sown (ha), productions obtained (t) as well as yields (t / ha) from 2000 to 2010 13

| | |
|---|----|
| Table 2: Productions of the main food crops from 2011 to 2018..... | 13 |
| Table 3: Level of adoption of improved varieties by producers | 16 |
| Table 4: Evolution of imports in Côte d'Ivoire from 2016-2017 (in tonnes of products)..... | 17 |
| Table 5: average fertilizer consumption per crop from 2011 to 2013 in tonnes..... | 17 |
| Table 6: Marketing system for the production of different crops | 18 |
| Table 7: new varieties of different crops of interest in Côte d'Ivoire | 21 |
| Table 8: Characteristics of some crop varieties resulting from research..... | 22 |
| Table 9 : Number of active breeders at CNRA level (Ph.D and MSc level..... | 24 |
| Table 10: Cultures and Research Institutes..... | 27 |
| Table 11: List of ongoing projects aiming to facilitate access to seeds of improved varieties | 31 |
| Table 12: The companies and individual producers involved in the production of certified seed are as follows | 33 |
| Board 13: List of agricultural cooperatives involved in seed production..... | 35 |
| Table 14: List of the best structured cooperatives in seed production | 36 |
| Table 15: Review of seed certification from 2013 to 2019 | 40 |

LIST OF FIGURES

| | |
|---|----|
| Figure 1 : Map of the vegetation and the main ecological zones of Côte d'Ivoire..... | 15 |
| Figure 2: <i>The markets of Côte d'Ivoire where all consumer goods are found</i> | 19 |

ACRONYMS & ABBREVIATIONS

| | |
|---------------------|---|
| 2PAI - ARIEL | : Agro-Industrial Pole Project in the Bélier Region |
| ADERIZ | : Rice Sector Development Agency |

| | |
|-----------------|--|
| ANADER: | : National Rural Development Support Agency |
| BFGD | : Training and Development Consulting Office |
| C2D | : Debt Reduction and Development Contract |
| CIDT | : Ivorian Company For The Development Of Textiles |
| CNRA | : National Center for Agricultural Research |
| DGPSP | : General Directorate of Planning, Statistics and Projects |
| DSP | : Country Strategy Paper |
| FAO | : Food and Agriculture Organization of the United Nations |
| JAAD | : Day of the Delocalized Agricultural Administration |
| MINADER | : Ministry of Agriculture and Rural Development |
| OSP: | : Seeds and Plants Office |
| PARFACI | : Support Project for the Revival of Agricultural Sectors in Cote d'Ivoire |
| PND | : National Development Plan |
| PNIA I | : 1st generation National Agricultural Investment Program |
| PNIA II | : 2nd generation National Agricultural Investment Program |
| PROPACOM | : Program of Support to Agricultural Production and Marketing |
| ABI | : Identification of operators and Agricultural Farms |
| PATH | : African Society Plantation Hevea |
| SARA | : International Exhibition of Agriculture and Animal Resources |
| SATMACI | : Company Technical Assistance for Modernization of Agriculture in Ivory Coast |
| SODEFEL | : Society for the Development of Fruits and Vegetables |
| SODEPALM | : Oil Palm Development Company |
| SODERIZ | : Development Corporation of Rice |
| SSG | : Seeds Group systems |

WAAPP / WAAPP : West Africa Agricultural Productivity Program / Agricultural Productivity Program in West Africa

1. Introduction and Background

Background and Rationale

Côte d'Ivoire is a predominantly agricultural country. Historically, the agricultural sector has always occupied a central place in the economy and development in terms of the agricultural labor force or contribution to the creation of wealth in the country. The cultivated area represents about 40% of the cultivable land which itself constitutes 75% of the national territory.

The agricultural sector which includes plant and animal production and agro-food industries occupies 66% of the working population, represents 35% of the GDP and more than 50% of export earnings and two-thirds of the sources of employment and income of the population according to the World Bank. In fact, despite fluctuations in the world prices of the main export products, Côte d'Ivoire achieves major performances and retains its leadership position, on the scale of Africa and the world, in several cash crops including cocoa, coffee, palm oil, cola, etc.

Ivorian agriculture is characterized by two main axes, including cash-crop agriculture mainly consisting of cocoa, coffee, oil palm, rubber, pineapple, sugar cane, cotton, bananas, etc., which is the main source of foreign exchange. and subsistence agriculture with plantains, yams, cassava, rice, corn and vegetables and livestock, still traditional and hardly benefiting from significant public financial support. However, this agriculture could ensure food security and the conditions for good nutrition for the population.

The effect of the international surge in food prices observed in 2007 and 2008 combined with the vagaries of the economy, that is to say, the period of strong instability initiated by the coup d'etat of December 1999 caused a drop in the nutritional situation and a deterioration in the living conditions of the most vulnerable populations. To deal with this worrying situation, the Ivorian Government has developed a strategy to revive food production with the focus on the development of crops linked to household food security, covering the consumption needs of milled rice estimated at 1 , 3 million tonnes by 2016 for example, and the development of production activities for staple crops such as rice, maize, cassava and yam.

Since this period, Côte d'Ivoire has returned to economic growth and regained its rank within the region and the continent. GDP per capita grew by 27% between 2012 and 2015, and exports, especially agricultural exports, increased sharply. Nevertheless, despite the general growth of the economy and that of the agricultural sector in particular, Côte d'Ivoire remains marked by a high level of poverty. Despite a recent slight improvement, over 56% of the rural population is still below the poverty line

In fact, population growth, persistent levels of malnutrition, low agricultural productivity and stagnant rural economies are major concerns facing the African continent and have for decades been the focus of significant investment by agencies. donors and African Governments including that of Côte d'Ivoire.

Among interventions directly targeting the lives and livelihoods of poor smallholder farmers, few have shown as much interest as the adoption of seeds of high-yielding crop varieties adapted to local conditions.

Sadly, Africa has suffered decades of unsuccessful seed supply attempts focused on government-run supply systems, community-based seed supply or interventions by multinational seed

companies, none of which have proven to be able to operate sustainably to reach a majority of farmers.

Recently, a model has emerged that focuses on building the capacity of local and private seed entrepreneurs, private and village-based input sellers, and national public crop breeders to work in a complementary manner in a value chain of crops. seed which provides certified seed of new varieties grown by national and international breeding institutes for local smallholders. The establishment of these public-private seed supply systems has increased supply and helped increase average yields of major food crops in a number of countries on the continent.

However, many African countries with significant agricultural potential have not participated in the transition to public / private seed systems and, therefore, have made little or no progress in improving food security or rural economic growth. To also bring the benefits of improved seeds to these farmers, the Seed Systems Group (SSG) proposes to carry out feasibility studies for the development of seed systems in these countries and to intervene in at least 10 of them. with the greatest possible success, over a period of 10 years.

Therefore, SSG solicits proposals from qualified professional consultants with expertise in agricultural development and seed systems for the collection of data, information and ideas related to crop breeding, seed provision, agricultural extension and related activities to raise awareness among farmers and supply networks for rural inputs. The information, analyzes and proposed interventions will be compiled in the form of a report, the content of which is described below.

a. Agricultural production systems

Ivorian agriculture is still largely based on the system of clearing / burning secondary forest or fallow of more or less long duration (4 to 20 years). Sedentary production systems almost exclusively concern lowlands, irrigated areas as well as perennial crops. Farms can be grouped into three main types

- Family farms. The most numerous, they produce food to meet their own needs, the surpluses are sold on local markets. The size of food farms, for the majority, varies between 0.5 and 1 ha and from 0.5 ha to 15 ha for cash crops.
- Urban and peri-urban farms, of small size (less than 1 ha, or even a few ares), are located in large urban centers (Abidjan, Yamoussoukro, Bouake) and on their periphery.
- "Modern" farms. Still few in number in the food sector, they specialize in speculations responding to strong market demand or being integrated into a chain of activity (corn for industrial breeders). It is essentially the agro-industrial complexes which combine production and processing of products, which use agricultural mechanization in the coastal part of the country in the sectors of rubber, oil palm and tropical fruits for export (bananas, pineapples, etc.).

A survey carried out by ANADER published in 1998 revealed that the equipment rate is very low and the vast majority of farms practice manual cultivation. Only 0.95% of farms have a tractor, 0.70% a mower, 0.32% a tiller, 4% a cart, 8% a plow and 8% a sprayer. 4.4% of farms practice harnessed cultivation, moreover mainly concentrated in the North, where there are 100,000 draft oxen and 50,000 teams. Despite the state's desire to modernize agriculture through the promotion and donation of modern tools, Ivorian agriculture still remains dominated by traditional practices with only 213 modern farms in crop production according to the REEA 2015/20156.

In 2016, the Ivorian or industrial secondary sector contributed 25% of the gross domestic product (GDP) of the local economy. Agribusiness occupies a prominent place since it represents approximately 31% of industry and 50% of manufacturing.

Four (4) major types of production systems dominate in Côte d'Ivoire:

- **Production systems in forest areas**, where cash crops predominate. Food and market gardening products developed in associated cultivation are intended for self-consumption and for supplying urban markets. Extensive food systems require significant land availability. The duration of the fallow has greatly reduced in recent years and requires a major effort to maintain soil fertility.
- **Production systems in the Sudano-Guinean zone** are characterized by the existence of two very distinct zones, one dominated by cotton, the other by cashew nut. Food crops are associated with perennial crops for two or three years, until the development of the plant cover no longer allows this cohabitation;
- **In the Sudanese zone**, food production systems are closely associated with cotton systems. Cotton companies provide advice, equipment (harness farming) and inputs that benefit the food crop. Pressure on land effectively involves developing reasoned rotational practices to maintain soil fertility. Food crops are also associated with the recently established cashew and mango plantations.
- **Urban and peri-urban agriculture.** The urban and peri-urban production systems are specialized in the production of vegetables, in addition to tubers and maize in the peri-urban areas of the large urban centers (Abidjan, Yamoussoukro, Bouaké). These units occupy an important part of the vegetable markets of these large urban centers. Forced by small areas and patent insecurity of land tenure, urban micro-farms take advantage of proximity to markets. Many farms play a dual role of producer and retailer. In the absence of water control, their production capacities remain limited between November and April.

b. Current and recent agricultural development initiatives

o b.1. Implementation of the Country Strategy Paper (CSP) 2013-2017

The 2013-2017 CSP had two pillars: (i) strengthen governance and accountability and (ii) develop infrastructure to support economic recovery.

Through the first pillar, the aim was to: (i) strengthen post-crisis socio-economic inclusion, by responding to requests for improvement of governance and provision of basic services in favor of the populations; (ii) support the social and economic integration / reintegration process; (iii) strengthen economic, financial and institutional governance; and (iv) accelerate the structural reforms necessary for industrialization.

As for the second pillar of the 2013-2017 CSP, it aimed to (i) support economic recovery through optimal use of natural resources, through the development of quality infrastructure, in inclusive areas, it is necessary to " give priority to rural infrastructure likely to have a catalytic effect on the development of agro-industrial value chains in order to attract the private sector to the transformation of agricultural production.

The operations program backed by the 2018-2022 CSP should include sector studies and reviews to guide future interventions, strengthen the monitoring and evaluation of the achievement of results at the level of operations and strategies.

The 2018-2022 CSP will continue to support structural infrastructure. The strategy will put more emphasis on sector governance and will be anchored on agro-industrial value chains for structural transformation of the economy. This option is based first of all on the priorities of the Government and dialogue with stakeholders (State, private sector, civil society)

○ **b.2. The National Development Plan (PND) 2016-2020**

The Government's ambition is to achieve emergence by 2020, with a solid industrial base. Thus, the 2016-2020 PND is based on five strategic axes: (i) strengthening the quality of institutions and governance; (ii) accelerating the development of human capital and promoting social well-being; (iii) acceleration of structural transformations and industrialization; (iv) the development of infrastructures harmoniously distributed over the national territory and the preservation of the environment; and (v) strengthening regional integration and international cooperation.

 **PNIA I**

To allow the agricultural sector to continue supporting the economic and social development of Côte d'Ivoire, reforms have been carried out, the 1st generation PNIA I (National Agricultural Investment Program) was created for the period 2012-2016. It is a program to revive the agricultural sector. It is part of a vision of revitalization and modernization of the agricultural sector focused on 4 strategic objectives:

- Food security and sovereignty;
- Sustainable management of cash and export crops;
- Private sector engagement by strengthening investments;
- Agricultural governance in terms of reforms of agricultural sectors, restructuring of professional agricultural organizations and the implementation of the law on rural land.

PNIA I enabled the establishment of a relevant post-crisis institutional framework for the agricultural sector. This framework takes into account the regulation of the sector, the definition of sectoral policies and the structuring of the sectors. The progress made is reflected in an average annual growth rate of the agro-forestry and pastoral and fisheries sector (in value) of 6% over 2010-2014, and increased production volumes in the majority of the plant and animal sectors.

 **PNIA II**

The second generation National Agricultural Investment Program (PNIA II) is the coherent framework for programming public and private investments in the agricultural sector over the period 2018-2025. It covers the sub-sectors of agriculture, animal husbandry, fishing, aquaculture, as well as environmental management. The overall objective is to stimulate sectoral growth to reduce poverty by half, and to reach the level of "zero hunger" by 2025.

PNIA II is particularly an opportunity to promote better territorial integration, through the implementation of the concept of Integrated Agricultural Development Pole throughout the territory. The vision for the Ivorian Integrated Agricultural Development Poles consists in fact of "agro-sylvo-pastoral and fishing investments that respect the environment, based on the potential of the territories and the needs of the populations, and benefiting all stakeholders. "

The PNIA II emphasizes the achievement of three strategic objectives:

- 1- The development of agro-sylvo-pastoral and fishery added value.

- 2- The strengthening of agro-sylvo-pastoral and fishery production systems that respect the environment.
- 3- Inclusive growth, guarantor of rural development and the well-being of populations.

To do this, five key implementation principles have been retained:

- a- The strengthening of governance structures relating to planning, programming, and monitoring and evaluation of policies and investments in the sector;
- b- Greater integration of the needs of businesses, to promote private participation and the development of entrepreneurship in the sector;
- c- Better vertical integration allowing greater synergy between research, production and processing activities;
- d- Better horizontal integration allowing more coordination between the agricultural sectors and related environmental and social domain in particular;
- e- Better territorial integration, to take greater account of the specificities of each region of Côte d'Ivoire.

- **b.3. Development centers**

The concept of Integrated Agricultural Development Center is based on five key axes:

- A localized agro-sylvo-pastoral and fisheries transformation strategy, which takes into account the realities of the territories.
- The definition of zones focused on priority sectors at national and local level (by selecting both food crops, cash crops, and animal / fishery sectors at the level of each zone).
- A concentration of facilities and services relevant to these sectors, in each of the defined areas.
- Strong involvement of the private sector and local communities.
- An approach consistent with that defined for competitive economic poles at the national level.

c. Development prospects for agriculture

All these initiatives aim to:

- Develop agricultural infrastructure to support value chains (rural roads, irrigation, storage warehouses, cold chains, logistics terminals, wholesale markets, agricultural training, servicing industrial land, upgrading production equipment);
- Improve good governance;
- Improve the level of processing of agricultural products;
- Establish an efficient agricultural administration;
- Increase the level of agro-industrial processing of raw materials from promising sectors (cocoa, coffee, cashew nuts, oil palm, rubber, cola, fruit textiles, etc.).

This will allow progress in agricultural value chains, and local transformation will require improving the business environment with particular attention to support mechanisms for SMEs, to enable them to be actors in the transformation of the sector. agriculture and therefore more inclusive growth. Achieving this result requires: (i) strengthening and rationalizing the investment incentive framework, (ii) strengthening the structures in charge of the business climate, (iii) strengthening the accounting and financial framework .

2. Agricultural production systems

a. Current production levels of food crops, yields and trends

The yields of the main food crops depend on the production areas and the period (seasons). The table below gives the variations (trends).

Board 1 : Main crops, areas sown (ha), productions obtained (t) as well as yields (t / ha) from 2000 to 2010

| Main crops | 2000 | 2010 |
|------------------|-----------|-----------|
| Yam (ha) | 505,408 | 829,595 |
| Yam (t) | 4,456,280 | 5,392,370 |
| Yam (t / ha) | 8.8 | 6.5 |
| Cassava (ha) | 271,254 | 349,521 |
| Cassava (t) | 2 100 354 | 2,306,839 |
| cassava (t / ha) | 7.7 | 6.6 |
| Maize (ha) | 284,372 | 324,045 |
| But) | 576,910 | 641 610 |
| corn (t / ha) | 2.0 | 2.0 |
| Paddy rice (ha) | 341,466 | 394,868 |
| Rice (t) | 621,805 | 722,609 |
| Rice (t / ha) | 1.8 | 1.8 |
| Sorghum (ha) | 57,668 | 67,803 |
| sorghum | 35 171 | 44,072 |
| Sorghum (t / ha) | 0.6 | 0.7 |
| Mil (ha) | 59,613 | 62,597 |
| Mil (t) | 38,422 | 48,826 |
| Mil (t / ha) | 0.6 | 0.8 |

Source: SNDCV 2014 final report

Board 2: Productions of the main food crops from 2011 to 2018

| Culture | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|-------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Yam | 5,531,865 | 5,674,969 | 6,414,017 | 7 039 238 | 6 649 927 | 6 894 514 | 7,148,096 | 7 391 131 |
| But | 621 790 | 654,738 | 848 617 | 960,809 | 1,025,743 | 967,196 | 1,025,228 | 1,054,960 |
| Cassava | 2,359,015 | 2,412,371 | 2 436 495 | 4 239 303 | 5,087,164 | 4,547,924 | 5,366,549 | 5,608,044 |
| Mil | 48,828 | 49,316 | 49,760 | 52,275 | 55,207 | 58,303 | 61,573 | 63,847 |
| Rice, Paddy | 873,016 | 1,561,905 | 1 934 154 | 2,053,520 | 2,152,935 | 2,054,535 | 2,119,610 | 2 006 874 |
| Sorghum | 46,460 | 48,438 | 50,472 | 51 344 | 55,071 | 59,069 | 63,357 | 65,661 |

Source: DSDI / MINADER

Production from 2011 to 2018 shows a marked increase in production for all crops. One of the reasons that could explain this is the adoption of food crops by producers as income-generating

activities. Several cooperatives and associations of young people and women linked to the food sector have emerged in recent years in Côte d'Ivoire.

b. Description of the country's main agro-ecological zones and cropping systems

The country is made up of four agro-ecological zones (the Guinean zone, the Sudanese zone, the Sudano-Guinean zone 1 and the Sudano-Guinean zone 2). It is also subdivided into three large ecological zones from south to north: dense forest bordering rivers and tropical forest covering the rest of the coastal basin, the savannah (dominant vegetation in the country), and the Sudanian zone. The four agro-ecological zones are characterized by:

- **Guinean zone (lower Ivory Coast forest)**

In the south and west of the country, it benefits from dense forest-type vegetation. There are four (4) seasons: a large dry season (December to March), a large rainy season (March to June), a small dry season (July to August) and finally a small rainy season (September to November). The average annual rainfall exceeds 1,800 mm. The altitude varies from 50 to 100 m in the South, Mountainous in the West with some peaks reaching more than 1000 m

- **Sudano-Guinean zone 1 (average Côte d'Ivoire forest)**

This zone is located in the center-south of the country with a vegetation of clear forest. It is marked by Four seasons: a large dry season (November to February), a large rainy season (March to June), a small dry season (July to August) and a small rainy season (September to October). Altitude varies from 50 to 400 m

- **Sudano-Guinean Zone 2 (Ivory Coast pre-forest)**

In the Center and East of the country, it has a humid Savannah Vegetation with four seasons: a large dry season (November to February), a large rainy season (March to June), a small dry season (July to August) and a small rainy season (September to October) Altitude varies from 50 to 400 m.

In the forest areas in the South and West (dense forest) and in the Center-South (forest, clear), there is a coexistence of annual food crops (rice, corn, cassava) and perennial export crops (cocoa, coffee, rubber, oil palm, etc.);

The savannah zones in the Center and East (humid savannah) and in the North (grassy savannah) are based mainly on annual food crops (maize, rice, sorghum, yam, etc.) and export (cotton), cashew nut as well. than extensive cattle breeding.

Each zone benefits from one or more crops which are favorable to it. But the South and West areas with dense forest, occupy most of the farmers.

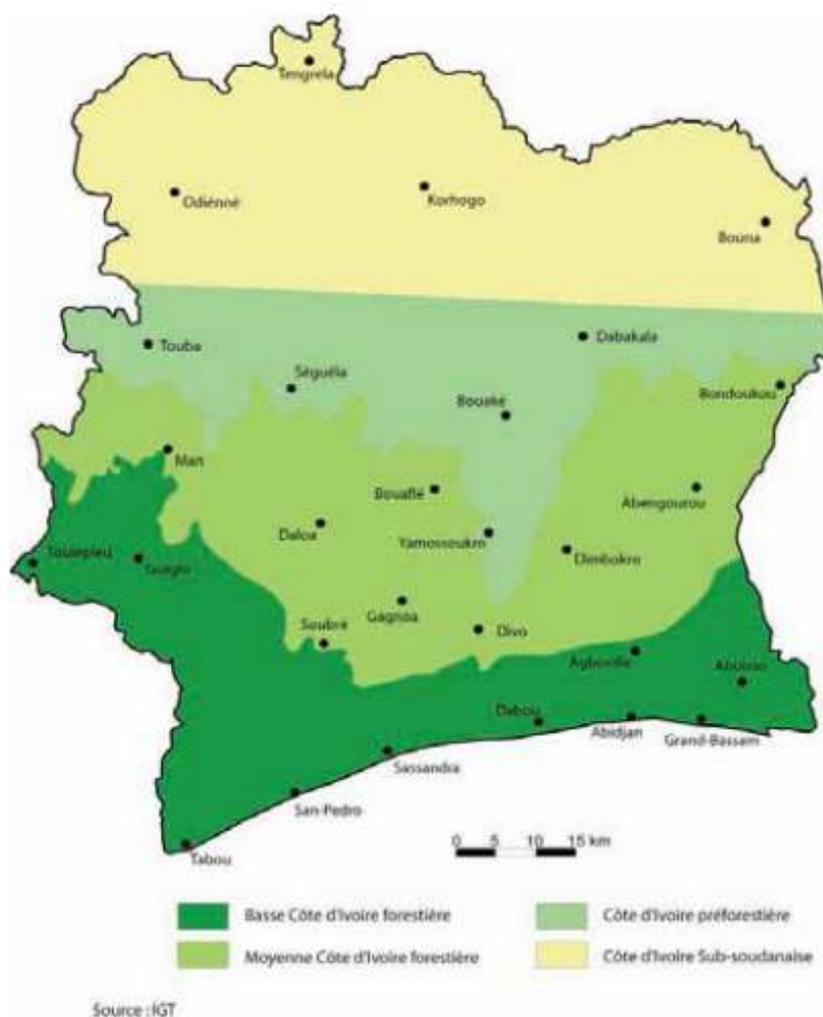


Figure 1 : Map of the vegetation and the main ecological zones of Côte d'Ivoire

c. Current state of agricultural extension activities, public and private

c.1. At the public level

- Staff
- 2,327 staff members compared to 2,363 staff in 2016, ie a decrease of 1.5%.
 - 84 agents recruited (74 technical agents and 10 support agents);
 - 107 agents struck off for various reasons;
 - 13 agents deceased.
- 1654 technical agents (71%) and 673 support agents (29%) out of the 2,327;
- 3,988 administrative acts drawn up and executed out of 5,000 planned, i.e. a completion rate of 67%.

The average age of the staff is around 44 years old. The workforce is aging but experienced overall. This induces a recruitment plan to be put in place to ensure succession and performance.

Women represent 23% of the total workforce. There is a slight improvement, but the Gender standard of 30% has not yet been reached. Recruitment of women and the promotion of women should be encouraged.

The Rural Development Facilitators (ADR) whose age is between 50 and 60 years, 42% of the total number of ADR. The staff is experienced consistent with the mission of the company.

Specialized Technicians (CA-CP-EL-OPA) whose age is between 50 and 60 years, 40% of the total number of TS. They are experienced trainers on which ANADER relies to mentor new (ADR TS) recruited.

For the success of its mission to agricultural advice, ANADER relies on specialized technical personnel. These include the Agricultural Engineers, Agricultural Technical Engineers, Veterinarians, agricultural technicians, economists, statisticians, sociologists, etc.

- infrastructure

ANADER, a structure closer to producers and largely responsible for extension, is made up of 7 regional directorates, 57 development zones, and 4 training centers spread over the entire territory. These are the Bingerville training center in charge of cooperation and livestock, the Grand-Lahou training center for mechanization and rice cultivation, the Gagnoa training center for perennial crops including coffee. and cocoa and the Kotobi training center for rubber, oil palm and market gardening.

c.2. At the private level

The private sector contributes to agricultural extension through capacity building of actors, encouragement and awareness. The organization of workshops on different themes related to agriculture. Also, he participates through donations.

d. Level of adoption of improved seeds, by crop

Board 3: *Level of adoption of improved varieties by producers*

| Food crops | Level of adoption of improved varieties (%) |
|------------|---|
| Rice | 90 |
| But | 95 |
| Cassava | 75 |
| Yam | 40 |
| Sorghum | 20 |
| mil | 20 |

e. Level of use of organic fertilizers and manure to increase yields, by crop

The level of fertilizer use on crops in Côte d'Ivoire, in general, is low. The country imports on average 300,000 to 350,000 tonnes of fertilizer per year.

There is no primary production of mineral fertilizers in Côte d'Ivoire.

- Five companies have fertilizer blending units in Abidjan and San-Pedro, making it possible to produce blending fertilizers for the Ivorian and sub-regional market (Mali, Burkina Faso)

- Local industrial production of organic fertilizers is gradually developing. The volume is around 5,000 tonnes per year.

Fertilizer imports reached 311,301 tonnes in 2017, a decrease of around 6% compared to 2016 (332,320 tonnes).

Board 4: Evolution of imports in Côte d'Ivoire from 2016-2017 (in tonnes of products)

| Type of fertilizer | Import 2016 | Import 2017 | % variation |
|------------------------------|----------------|----------------|-------------|
| KCL | 82,073 | 99,905 | 22 |
| TSP | 55,348 | 62,045 | 12 |
| UREA | 66 682 | 43,849 | -34 |
| NPK | 54 224 | 34 687 | -36 |
| DAP | 39,881 | 25,217 | -37 |
| Ammonium Sulphate | 20 175 | 21,595 | 7 |
| Other fertilizers | 13 937 | 24,003 | 72 |
| Total import (tonnes) | 332,320 | 311 301 | -6 |

Source: AfricaFertilizer (April, 2018)

This decrease is due to the decrease of about a third of the imported quantities of urea, DAP and NPK, used in particular as raw materials for the production of blending fertilizers or for application on cotton (NPK 15-15- 15 + 6S + 1B).

In 2017, KCL was the most imported fertilizer in Côte d'Ivoire accounting for 32% of total imports. Imports in 2017 of KCL and TSP have increased significantly compared to 2016 (+ 22% for KCL, + 12% for TSP). These 2 raw materials are used in particular for the production of NPK 0-23-19 cocoa fertilizer.

The NPK 15-15-15 + 6S + 1B used in cotton represents about half of the NPKs imported in 2017.

6,300 tonnes of NPK 0-23-19 + 2.5S + 10CaO + 0.1Zn fertilizer used in cocoa were imported in 2017.

In Côte d'Ivoire, the cotton sector is the main consumer of fertilizer with around 46% of all national consumption between 2011 and 2013.

Board 5: average fertilizer consumption per crop from 2011 to 2013 in tonnes

| Culture | 2011 | 2012 | 2013 | Average | Percent (%) |
|------------------|---------|---------|----------|----------|-------------|
| Cotton | 61,750 | 84.127 | 97.075 | 80.984 | 46 |
| Cocoa | 30,800 | 19,000 | 33,500 | 27,767 | 16 |
| Oil palm tree | 29 109 | 20,372 | 23 856 | 24,446 | 14 |
| Food crops | 12,705 | 16.971 | 19,796 | 16.391 | 9 |
| Sugar cane | 15,770 | 16,095 | 17.924 | 16,596 | 10 |
| Banana | 2.100 | 6.400 | 7,200 | 5.233 | 3 |
| Rubber tree | 1,500 | 2,000 | 4,900 | 2,800 | 2 |
| Market gardeners | 500 | 300 | 500 | 433 | 0.25 |
| Pineapple | 500 | 500 | 1,000 | 667 | 0.38 |
| total | 154,734 | 165,465 | 205, 751 | 175, 316 | 100 |

Source: AfricaFertilizer (August, 2015)

f. General description of the marketing system for surplus production of staple crops

The food crop marketing system is inoperative. In fact, in Côte d'Ivoire transactions in this sector are governed by the sole law of supply and demand. Liberalism is rife with every commodity, with the exception of rice. The traders address themselves directly to the peasant isolated in his field. Prices vary from place to place. There are no official courses. The storage and conservation conditions being very precarious, the producer is very often forced to accept the prices offered by the trader. The latter generally owning means of transport imposes his will on transactions. Suddenly, it is free for him to create a shortage here while stocks are rapidly deteriorating there.

The case of rice is different because it juxtaposes two circuits: a State circuit where prices are controlled by official bodies and where transactions are subject to fixed and known conditions and a so-called traditional circuit, where market conditions are occult and where exchanges are not made from person to person by means of various units of measure: bowl, bag, bucket, basket or even heap.

This second circuit knows all kinds of uncontrollable negotiations such as indebtedness at prohibitive rates, the pledging of the harvest by the peasants caught by the throat at the time of the food lean or by the school expenses of their children.

The official rice trade channel also benefits from some improvements in terms of preservation and processing through a number of modern storage warehouses and sufficient throughput rice mills processing paddy. However, despite these technical improvements, rice is also experiencing production difficulties due in particular to changes in government collection and price policy: the government in 1977 dissolved SODERIZ, which since 1974 had organized production and marketing. The Office for the Marketing of Agricultural Products (OCPA), which replaced this body in terms of collection, processing and marketing, was less efficient than it. Quite quickly, private collectors took over. In addition, the price per kilo of paddy rice in constant francs quickly crumbled. In current francs, after being maintained for seven years at 65 F CFA, the price per kilo fell 50 F CFA in 1981 and only rose to 60 F CFA in 1982. In addition, there are uncertainties in the functioning of the circuits. collection. To date, the price of a kilogram of paddy varies between 100 and 125 F CFA.

The table below gives an overview of the marketing systems according to the type of crop. No source it is designed by the editor from the documentation

Board 6: *Marketing system for the production of different crops*

| Category | Cultures | Marketing system |
|----------------------|--|---|
| cash crops | Cocoa / coffee, natural rubber, Palm oil, Cashew nut, Cotton, mango, cola. | Sale by agricultural sector, the prices of which are set by the State, with a Regulatory Authority; |
| Basic food crops | Plantain, yam, cassava, corn, rice, | Free market. |
| Secondary food crops | millet, sorghum, taro, vegetables, fruits | Free market |

g. Trends in the development of sectors and sales channels for staple food crops

Ivorian businesses are managed by the Ministry in charge of Trade, Handicrafts and the Promotion of SMEs, which is responsible for implementing and monitoring policy in this area. Due to the social and political instability that Côte d'Ivoire has suffered, the Government has been forced to review its strategy in order to win back investors who had fled the country. Several companies, mostly SMEs (small and medium-sized enterprises), then had to go out of business. Today, the Ivorian government has embarked on a development policy for SMEs in order to increase the number of businesses in the country. Ivorian businesses bring together markets, shops and boutiques, restaurants, hotels, e-commerce or the fair trade sector.

The steps

In Ivory Coast, markets bring together many small traders who offer for sale of local products from local crafts. One can thus find jewelry, beads, animal skins or local medication. The garments like scarves and cloths, and the shoes are also presented on the shelves of Ivorian markets. Tableware, objects and articles bazaar and perfumes are also sold.

Food products such as bananas, yams and vegetables delight locals and tourists alike who come looking for Ivorian products to cook and taste. The primary purpose of these markets is also to sell these food products. The different products present on the Ivorian markets are often organized into several sectors which can extend over impressive surfaces. Below, a view of the Yamoussoukro market is one of those huge markets in Côte d'Ivoire.



Figure 2: The markets of Côte d'Ivoire where all consumer goods are found
Source: GoAfrica online.

Apart from the traditional markets known to all, we notice more and more the development of road markets that can be found near the roadblocks erected by the security forces or in the control zones installed on the main roads of the country. We meet people of all kinds, occasional or non-occasional travelers, merchants or entrepreneurs. These hybrid markets have seen their popularity increase significantly due to the deterioration of living conditions for Ivorians and the presence of security forces who make the places more secure for visitors.

Côte d'Ivoire being a capitalist country with a liberal economy, the market for food crops is liberal. Prices are discussed between the producer and the buyer. There is no state intervention, except in the case of imported rice.

The State's action relates to the organization of actors through the training of cooperatives and umbrella organizations through the Directorate of Professional Agricultural Organizations (DOPA) of the Ministry of Agriculture and monitoring by the Ministry in charge of trade .

3. National agricultural research system

a. Public institutes and universities actively engaged in plant breeding

In Côte d'Ivoire, public universities including the Félix Houphouët-Boigny University in Cocody-Abidjan, Nangui Abrogoua in Abobo-Adjamé, Lorougnon Guédé in Daloa, Péléforo Gon Coulibaly in Korhogo and the University of Man have their genetics and improvement laboratories. However, given the major difficulties linked above all to the lack of financial resources and also to the absence of plots available for basic research at the level of these public universities, the teacher-researchers of the various genetics and species improvement laboratories have established work and internship agreements with researchers from the National Center for Agronomic Research (CNRA).

These internship agreements, which are related to the master's and thesis subjects of public university students, most often concern the defense of crops, agronomy, agro-morphological and molecular characterization at the level of varieties of different export crops and the food crops set up by the CNRA as part of its fundamental research activities on plant breeding.

CNRA's crop improvement activities are directed towards export crops and food crops as well as animal and fish production. There are a total of five (5) lines of research including research on food crops for food security, on industrial crops, that is to say perennial plants for export, on animal and fish production for livestock production and inland fisheries and aquaculture, on agrarian systems and natural resource management for forest management and development, and on post-harvest biotechnology and technologies for the processing and conservation of agricultural products.

These lines of research are broken down into 20 improvement programs located at various CNRA research stations. The research stations develop new improved / selected plant materials of these crops, produce pre-basic and basic seeds to make them available to groups of seed producers, individual producers and structures.

Regarding export crops, these are genetic improvement programs for cocoa, rubber, coconut, coffee and cola combination, cotton, oil palm and cashew nut. , mango and papaya, sugar cane. In terms of animal production, improvement programs concern continental breeding, fishing and aquaculture production.

For food crops, it is a question of genetic improvement programs for plants with roots and tubers (yam, cassava and sweet potato), rice, the combination of plantains, bananas and pineapples, the combination of maize, millet. and sorghum and finally vegetable crops (chilli, eggplant, tomato and okra) and protein crops (soya, cowpeas and peanuts).

b. Current situation of recent or current varietal selection, by species

In Côte d'Ivoire, activities related to varietal improvement and selection are carried out mainly by the CNRA, which results from the merger of former research institutes such as Ex-IDESSA, IDEFOR, etc. and which brings together several research teams on the various cultures of interest in the country. The export crops concerned are among others coffee, cocoa, hevea, oil palm, cashew, papaya, sugar cane and cotton and food crops represented by rice, corn, cassava, plantains as well as legumes such as cowpeas, peanuts and soybeans.

These CNRA plant breeding activities, initiated decades ago, have enabled Côte d'Ivoire to obtain new, high-performance varieties both in terms of exports and food crops. Thus, at the CNRA, there are currently 31 new improved or selected plant materials for export or cash crops and 33 for food crops. The table below provides an overview of these new selected varieties.

Board 7: new varieties of different crops of interest in Côte d'Ivoire

| Export crops | | |
|---------------------|--|---------------------------------------|
| Order number | Designation | Yields |
| 1 | <i>Cocoa</i> | 3 t / ha from 11 years old |
| | 11 hybrids resistant to CSSV | |
| 2 | <i>Cashew</i> | 1.5 - 3.0 t / ha from 6 years old |
| | 3 genotypes | |
| 3 | <i>Rainfed sugar cane</i> | 55 - 59 tc / ha; 5.3 tse / ha |
| | 3 varieties | |
| 4 | <i>Oil palm tree</i> | 30 t / ha; THR = 32% |
| | 10 hybrids | |
| 5 | <i>Coffee</i> | 2.5 - 3 t / ha, precocity = 12 months |
| | 1 variety | |
| 6 | <i>Cotton plant</i> | 4 t / ha |
| | 2 varieties | |
| 7 | <i>Coconut tree</i> | 5 t / ha of copra from 5 years old |
| | 1 hybrid | |
| TOTAL | | 31 |
| Food crops | | |
| 1 | <i>Yam</i> | 20 - 40 t / ha |
| | 3 varieties | |
| 2 | <i>Cassava</i> | 30 - 35 t / ha |
| | 4 varieties | |
| 3 | <i>Sweet potato with colored flesh</i> | 15 - 25 t / ha |
| | 3 varieties | |
| 4 | <i>Tomato</i> | 9 - 35 t / ha |
| | 3 varieties | |

| | | |
|--------------|----------------------|----------------|
| 5 | <i>chilli pepper</i> | 15 - 18 t / ha |
| | 3 varieties | |
| 6 | <i>Eggplant</i> | 20 - 50 t / ha |
| | 5 varieties | |
| 7 | <i>Upland Rice</i> | 4 t / ha |
| | 4 varieties | |
| 8 | Irrigated Rice | 4 t / ha |
| | 4 varieties | |
| 9 | <i>But</i> | 2.3 - 3 t / ha |
| | 4 varieties | |
| TOTAL | 33 | |

Source: CNRA (2017).

The results of these research activities linked to varietal selection have also enabled Côte d'Ivoire to be competitive on a global level, especially in terms of export crops.

At the level of major food crops such as rice, all varieties selected by the CNRA were made on the basis of the following important characteristics:

- at. precocity;
- b. good productivity (high efficiency and stability);
- vs. resistance to diseases like yellow variegation, blast, etc. ;
- d. lodging resistance;
- e. good organoleptic and culinary qualities (good taste);
- f. good tillering.

Board 8: Characteristics of some crop varieties resulting from research

| GMRP-18 corn variety | |
|-----------------------------|--|
| Scientific name | Zea mays L. |
| Popularized name | GMRP-18 |
| Variety type | Open-pollinated variety |
| Ecology | Forest and savanna areas |
| Agronomic characteristics | Maturity cycle: 100-105 days Plant height (m): 1.67 Ear length: 17 cm Ear diameter: 4.9 cm Resistance to lodging and breakage: Good Rust resistance: Good Streak resistance: Good Helminthosporiosis resistance: Poor Resistance to <i>Striga hermonthica</i> : Poor |

| | |
|--|--|
| Yield | Yield in station: 4-5 t / ha Yield in peasant environment: 1.5-2 t / ha |
| Technological features and nutritional | Bean color: yellow Grain type: Semi toothed Sweet taste Easy to grind Rich in essential amino acids (Lysine and Tryptophan) |
| Valuation | Consumption of fresh or dry grains Processing into flour Manufacture of bread, cookies and cakes Manufacture of animal feed and poultry |
| Assets | Suitable for forest and savannah areas Rich in essential amino acids |
| Weakness | Susceptible to helminthosporiosis and Striga hermonthica |
| Variety of rice ANGBE (IDSA 91) | |
| Scientific name | <i>Oryza sativa</i> L. |
| Popularized name | ANGBE (IDSA 91) |
| Variety type | Hybrid |
| Ecology | Plateau and hydromorphic zone |
| Agronomic characteristics | Type of culture: Pluvial Plant height: 80 cm Cycle (sowing - maturity): 125-130 days Drought tolerance: Good Lodging resistance: Good Blast resistance: Medium Acidity resistance: Medium Gin sensitivity: Medium |
| Grain yield | Yield in station: 3.7 t / ha Yield in rural areas: 1.7 t / ha |
| Machining efficiency | % total bleached: 72.6 % whole blanched: 67.7 |

| | |
|--|--|
| Technological features and nutritional | Grain length (L): 7.5 mm Grain width (l): 2.4 mm Grain shape (L / l): (3,2) Thin Grain color: Fawn 1000 grain weight: 27.2g Color of cargo rice: White Translucency: Fairly good Amyloidosis rate: (14.4%) pasty and sticky grains Gel consistency: (99 mm) Soft |
| Valuation | Consumption in many forms |
| Assets | Good drought tolerance Good lodging resistance Good machining efficiency Extra long and thin grains |
| Weakness | Sensitive to soil acidity |

Source: CNRA (2017)

c. Inventory of public seed research institutions

▪ Scientific staff

Since the creation of the CNRA, several researchers with a Ph. D as well as research assistants with Msc level have been recruited to enable the implementation of research policy in Côte d'Ivoire. All of this high-quality scientific staff, totaling 79, enabled the improvement of export crops, food crops. In addition to these researchers, the CNRA also recruited 10 researchers at the level of livestock production and inland fisheries and aquaculture programs, 16 researchers for the agrarian systems and natural resource management program and finally 14 researchers with regard to Biotechnology and Post Harvest Technology program.

Board 9 : Number of active breeders at CNRA level (Ph.D and MSc level).

| | Public (Ph.D and Msc) | Total |
|-----------------------|-----------------------|-------|
| Rice | 6 | 6 |
| Corn, millet, sorghum | 3 | 3 |
| Vegetable crops | 4 | 4 |
| Plantain, pineapple | 8 | 8 |
| Roots and Tubers | 6 | 6 |
| cocoa | 13 | 13 |
| Rubber tree | 7 | 7 |

| | | |
|--------------------------|------------|------------|
| Coconut tree | 6 | 6 |
| Coffee-cola | 5 | |
| Cotton | 7 | 7 |
| Oil palm tree | 9 | 9 |
| Cashew, mango, papaya | 5 | 5 |
| Sugar cane | 1 | 1 |
| Animal production | 10 | 10 |
| Agrarian systems | 16 | 16 |
| Biotechnology | 14 | 14 |
| Total | 119 | 119 |

Source: CNRA (2017)

- **Infrastructure**

The CNRA, a state structure, is made up of a General Directorate, 5 regional directorates including the Regional Directorate of Abidjan, Korhogo, Man, Gagnoa and Bouaké with 20 operational research units including 13 research stations. The CNRA also has 5 experimentation and production stations and three (3) central laboratories including the biotechnology laboratory at the CNRA management in Abidjan, the conservation and processing laboratory in Bingerville and the soil, water and plants in Bouaké in central Côte d'Ivoire. Universities also have research laboratories, but these are currently under-equipped.

d. Recent or ongoing collaborations with the private sector and farmer organizations in seed supply

There are two levels of collaboration between the State and the private sector in terms of seed supply:

- 1) Since 2007, through the TCP project entitled “Support for the revitalization of the seed sector in Côte d'Ivoire”, funded by FAO, the State has set up 13 regional seed associations, which subsequently formed federated to create the National Association of Seeds of Côte d'Ivoire in June 2009. This association aims to ensure good governance of the seed sector.
- 2) Tenders for the supply of seeds: As part of the implementation of projects and programs, the State launches a call for tenders to private sector companies for the supply of seeds and other inputs.

e. Current status of seed production license agreements by third parties

In Côte d'Ivoire, research activity on plant improvement is for the most part managed by the CNRA, a state structure. All the results obtained are automatically transferred to the public domain.

However, the Chinese Assistance Mission in Côte d'Ivoire has approved four (4) varieties of Rice and Bayer Crops Sciences and one (1) variety of corn. These varieties are freely used by producers. No license binds the State of Côte d'Ivoire to these three structures with regard to the use of varieties approved on their request.

4. Inventory of seed supply and supply

a. History of varietal selection and seed supply in the country

a1. History of the country's varietal selection

The varietal selection policy of Côte d'Ivoire was put in place by the creation by the Government of the Institut des Savanes (IDESSA), for the northern zone and based in Bouaké and Korhogo, the Forest Institute (IDFOR) for the southern zone and the Research Institute for Transformation / Conservation Technologies (CIRT).

IDESSA's vocation was varietal selection at the level of food crops, agronomy, crop protection, management of agrarian systems and natural resources, and animal and fish production.

IDFOR took care of the varietal selection of export crops of great importance for the country including coffee, cocoa, rubber, oil palm, mango, papaya, cotton, etc.

The CIRT was interested in the processing and conservation of the country's agricultural products.

In 1998, the CNRA (National Center for Agronomic Research) was created by the merger of three former research structures including IDFOR, IDESSA and CIRT.

Its mission includes the creation, conservation and the first multiplication of varieties of plant species to be disseminated in the environment. Since its creation, the CNRA has effectively contributed, despite funding problems, to setting up recent high-performance varieties which are offered for propagation and distribution.

Alongside this center, an international research institute, WARDA or AfricaRice, based in Bouaké, initially focused on rice growing (rainfed and irrigated), is gradually participating in agricultural research programs, both nationally and internationally.

Finally, through a partnership with another regional research center (IITA) for food plants in general, and a development and support network for specialized sectors (including RADHORT for horticulture, including market gardening), the CNRA participates in regional experiments and benefits from an important potential source of seed supply of proven quality. The effectiveness of this partnership obviously remains linked to the dynamism and resources of the national structures concerned.

b1. History of the country's seed supply

The agricultural policies of Côte d'Ivoire have been developed since the 1950s and have not stopped evolving since it gained independence in 1960. Within the framework of seed production policies, two periods can be distinguished. :

From 1950 to 1990 : period marked by the direct involvement of the State through the establishment of adequate means for the production and free distribution of seeds through the SODEs (Table 1):

1. The African Hevea Plantation Company (SAPH) in 1955;
2. The Technical Assistance Company for the Modernization of Agriculture in Côte d'Ivoire (SATMACI), in 1958;
3. The Palm Tree Development Company (SODEPALM), in 1963,
4. The Fruit and Vegetable Development Company (SODEFEL) and PALMINDUSTRIE, in 1969;
5. The Rice Development Company (SODERIZ), in 1970;
6. The Ivorian Company for the Development of Textiles (CIDT), in 1974;
7. The Office of Seeds and Plants (OSP), in 1984.

The production of crop seeds (oilseeds, stimulants, fiber plants, food crops) relied on specialized Research Institutes. The multiplication was done as well by the structures of development as by farmers who multiplied seeds. For the companies in the organized sectors, the seed issue was, from their creation, an element of the sectoral approach. It was up to these companies to ensure the supply of the farmers with improved seeds or to self-supply for the plantations under management.

Before 1984, food crops were not the subject of specific seed programs. All of the rice, corn and cotton seeds distributed by the Compagnie Ivoirienne pour le Développement des Textiles (CIDT) were produced under contract by farmers who multiply seeds in the company's intervention zone.

The production of certified seeds of soybeans, upland rice, corn and vegetable crops was entrusted to the seed farms of Touba, Odienné, Bouaflé and Dikodougou. These farms were managed by the Office for Technical Studies of Agricultural Projects (BETPA) until 1984 then by the Office of Seeds and Plants (OSP) created within the framework of the national seed plan of 1984-1990.

Board 10 : Cultures and Research Institutes

| Dates | Development structures | Cultures concerned | Research institutes |
|-------|------------------------|---------------------------|---------------------|
| 1955 | SAPH | Rubber tree | IRCA |
| 1958 | SATMACI | Coffee, Cocoa | IRCC |
| 1963 | SODEPALM | Oil palm tree | IRHO |
| 1969 | SODEFEL | Fruits and vegetables | IRFA / IRHO |
| 1969 | PALMINDUSTRY | Oil Palm, Coconut Palm | IRFA / IRHO |
| 1970 | SODERIZ / CIDV | Rice and other food crops | IRAT |

| | | | |
|------|------|--------------------|---------------|
| 1974 | CIDT | Cotton, food crops | IRAT / IRCT |
| 1984 | OSP | Food crops | IDESSA / IRAT |

1984: Creation of the Seeds and Plants Office (OSP)

Taking into account the importance of quality seeds as the first factor in the intensification of production systems, the Government, in 1984, set up the Office des Semences et Plants (OSP), responsible for preparing and implementing implements an efficient seed policy. The PSO's missions essentially consisted of: (i) creating an institutional and regulatory framework; (ii) propose varieties for approval; (iii) draw up general technical production regulations; (iv) draw up Catalogs of Species and Varieties cultivated in Côte d'Ivoire; (v) ensure the production and marketing of certified seeds.

Unfortunately, the PSO was unable to carry out its missions effectively for various reasons. The Government has therefore decided to privatize the production and marketing of seeds, with the aim of:

- Meet the demand of the greatest number of peasants;
- Train a body of professional technicians;
- Train farmers who multiply seeds;
- Reduce the high production cost of conditioned seeds.

From 1990: This period marked by the liberalization of the seed sector and the withdrawal of the State from production and marketing activities for agricultural productions, leading to the withdrawal of subsidies by the State, which only retains its sovereign role of defining policies and regulating and arbitration.

This situation has had negative effects on the seed sector with a total lack of seed control and certification, the marketing of poor quality seeds on the national territory, the poor functioning of the seed administration due to lack of human and material resources. , the absence of seed legislation to secure the various operators of the sector and the users of seeds, a disarticulation of the main functions of the seed sector including the supply of the sector with pre-basic and basic seeds, of quality seeds in insufficient quantities, the lack of an efficient seed distribution and marketing network.

This situation has also forced the seed producers to resort to farm seeds, "good to sow" or "all-rounder". Many of them collect part of their harvest for sowing, so the private sector has remained reluctant to invest in the seed sector in Côte d'Ivoire.

Inventory

The production and use of seeds of improved varieties of cultivated plants are permanent concerns of the Ministries in charge of agricultural development.

Ivorian agriculture uses varieties created by the national agricultural research system (SNRA), but also benefits from introductions from abroad and in particular from institutions of the international agricultural research system.

The use of selected seeds and plants is more or less developed depending on the sector. So :

- The pineapple, banana and papaya export sectors essentially use 100% improved plant material;
- The palm, coconut and rubber sectors use 100% of improved plant material;
- The cotton sector uses 100% improved plant material;
- The horticultural sector uses selected seeds and plants for all export productions;
- The coffee and cocoa sectors use 40% of improved plant material from agricultural research institutes and cutting centers of the State extension services (ANADER);

b. Recent and ongoing activities aimed at the dissemination of improved crop varieties, by crop

Recent or ongoing activities aimed at the dissemination of improved crop varieties are mainly agricultural sector projects where a component linked to seeds is included in each project. Also through events such as SARA (International Exhibition of Agriculture and Animal Resources), JAAD (Day of Delocalized Agricultural Administration)

c. Recent and ongoing activities aimed at increasing the country's seed capital

It is mainly through the projects:

PROPACOM-West 2017 : aimed to make available improved G4 seeds, quality inputs, capacity building of producers to produce certified R1 category seeds.

The Agricultural Production and Marketing Support Project is financed by the International Fund for Agricultural Development (IFAD) and implemented by the Ministry of Agriculture over the period 2013-2018. It covers three districts in the north of Côte d'Ivoire: the Bandama Valley, Savanes and Zanzan and targets three sectors: rice, maize and market gardening.

This project implements in the maize sector activities of production / multiplication of seeds, training on production and marketing, mechanization for the production and processing of maize and support for the structuring of actors (cooperatives, unions) . It also plans to assess and support Market Information Systems on food products.

PARFACI

As part of the HIPC initiative, France has chosen to implement a grant refinancing mechanism for due maturities: "the Debt Reduction and Development Contract (C2D)". The funds thus mobilized are allocated to financing poverty reduction programs identified in partnership with the beneficiary States.

Among the priority sectors identified in the fight against poverty is agriculture, rural development and biodiversity.

The support program for the revival of agricultural sectors in Côte d'Ivoire (PARFACI) was initiated for this purpose and includes the following projects:

- The C2D-PSAC project in charge of the rehabilitation of agricultural roads and support for the cotton sector and whose implementation is ensured by the UCP-PSAC. This project is co-financed with the World Bank.
 - The Cotton Budget Support project
 - The C2D-PARFACI project in charge of supporting (i) the implementation of the law on rural land, (ii) support for food sectors and (iii) institutional support.
- The project started in 2013 ends in 2020

The development objective of the C2D-PARFACI project is to revitalize the agricultural sector in Côte d'Ivoire, improve the income of producers and effectively fight poverty in rural areas through the improvement of food production, " improvement of marketing channels, support for the structuring of takeover bids, support for the implementation of the law on rural land and support for building the management and strategy capacities of the ministries in charge of agriculture and livestock.

In the Component dedicated to Support for food sectors, market gardening and soybeans, development of production platforms for market garden crops by localized irrigation, establishment by the National Agronomic Research Center (CNRA) of a network of quality seed producers for seed production), strengthening of the structuring of the sector locally , pilot marketing support projects selected on the basis of their innovation, replicability and economic viability.

2PAI ram for the year 2019

The general objective of this intervention is to support the actors of the seed sector in the production of certified category R1 seeds. This support will make it possible to have a capital of R1 certified seeds, contributing to better productivity and increased income for producers. Specifically, it will be:

- Monitor the operationalization of the national seed sector development strategy (SNDSS) in the ram region;
- Ensure the pre-control by validating the selected production sites;
- Ensure the registration of crop declarations;
- Ensure controls and inspections in the fields of seed production plots;
- Ensure the issuance of approval certificates;
- Supervise control and inspection activities in the fields;
- Perform sampling for analyzes;
- Ensure laboratory analysis;
- Label the batches and issue certificates of conformity;
- Build the capacities of seed producers and extension agents;
- Build the capacities of controllers, seed inspectors and laboratory technicians;

d. Current options for smallholders to access improved and certified seeds

The State, through projects, offers improved seeds to small farmers and agricultural cooperatives in order to increase the quality and quantity of their productions. Also the Rural Development Support Agency (ANADER) and the National Agronomic Research Center (CNRA) make improved seeds available to farmers. Below is the table giving the current

projects and their expected achievements aimed at facilitating access to seeds for small producers.

Board 11: List of ongoing projects aiming to facilitate access to seeds of improved varieties

| PROJECT TITLE | PERIOD OF EXECUTION | EXPECTED ACHIEVEMENTS OF THE PROJECT FACILITATING ACCESS TO SEEDS BY SMALL FARMERS |
|---|---|--|
| Sustainable Agricultural Sectors Program of Cote d'Ivoire (C2D-FADCI) | 04/28 / 2016–12 / 31/2022 (06 years old) | <ul style="list-style-type: none"> ➤ 1,420 ha of plots developed downstream of the three rehabilitated hydro-agricultural dams are developed for an expected production of 7,200 T of rice, 3,200 T of maize and 8,500 T of vegetables from quality seeds |
| Agro-Industrial Pole Project in the Bélier region (2PAI-Bélier) | June 16, 2017 - December 31, 2021 | <p>Additional production planned / year with certified seeds:</p> <ul style="list-style-type: none"> ➤ 22,000 tonnes of paddy rice ➤ 72,000 tonnes of corn ➤ 360,000 tonnes of cassava ➤ 11,000 tonnes of vegetables |
| Support Project for the Revival of Agricultural Sectors in Côte d'Ivoire (C2D-PARFACI) | Execution period:11/22/2013 - 08/30/2019 (06 years old) | <ul style="list-style-type: none"> ➤ Quality adapted seeds are available for vegetables and soybeans); ➤ A market information system is developed for the project crops (soybeans and vegetables). |
| Hydro-Agricultural Development Project in the Haut Sassandra and Fromager-Phase-II Regions | Initial execution period: 01/02/2016 to 12/31/2016 Loan extension: (12/31/2017 and 03/31/2018) | <ul style="list-style-type: none"> ➤ 332 ha of land are developed downstream of the dams; ➤ 3 seed storage stores are built; ➤ xx quantities of inputs are distributed; |
| Support Program for the Development of Agricultural Sectors (PADFA) | Execution period:2018-2025 (07 years) | <ul style="list-style-type: none"> ➤ Rainfed rice production on 12,500 ha ➤ Production of 4000 tons of rice seeds; ➤ Acquisition of 200 kg of seeds (tomato, okra, onion, aubergine pepper ➤ Establishment of a network of 10 |

| | | |
|---|--|--|
| | | seed distribution shops |
| Agricultural Infrastructure Support Project in the Indenié region - Djuablin (PAIA-ID) | Initial execution period: 03/20/2012 - 02/28/2018 First extension : 02/01/2018 - 02/28/2019 Second extension 03/01/2019 - 11/30/2019 | <ul style="list-style-type: none"> ➤ Development of 763.2 ha of lowlands for irrigated rice cultivation using improved seeds; ➤ Support for unorganized food sectors (maize, cassava, yams, plantains, peanuts) and the market gardening sector by making quality inputs available to producers; |
| Emergency Food Production Support Program (PUAPV) | Execution period: October 2016 - December 2018 | <ul style="list-style-type: none"> ➤ Production of cuttings ➤ Establishment of plots and stump yards ➤ Production of vivo plants ➤ Marketing |
| Value Chain Development Project in the Indenié region - Djuablin (PDC-ID) | Period of execution : February 28, 2017 - June 30, 2020 | <ul style="list-style-type: none"> ➤ Establishment of a network of selected seeds of maize, yam and cassava ➤ Support from 40 women's groups in market gardening ➤ Establishment of a value chain development fund for the benefit of 9,750 producers, 80% of whom are women |
| Agricultural Production and Marketing Support Project WEST Extension (PROPACOM OUEST) | Initial execution period: November 21, 2014 - June 30, 2021 (06 years old) | <ul style="list-style-type: none"> ➤ 7249 producers supervised ➤ 660 tonnes of lowland rice, 2319 tonnes of rainfed rice and 4,990 tonnes of maize produced from improved seeds ➤ 19,560 tonnes of cassava produced from improved plants |
| Local Rice Promotion Project (PRORIL) | Initial execution period: April 2014 - March 2019 (05 years) Extension period : April 2019 - March 2020 (01 year) | <ul style="list-style-type: none"> ➤ Facilitate access to input credits for producers; |
| Sangopari Hydro-agricultural Development Project | Initial execution period: 2012-2016 Execution period reviewed: 2012-2019 | <ul style="list-style-type: none"> ➤ Vegetable seeds are available in the project intervention area, ➤ 793 beneficiary producers are trained in cultivation techniques; |

| | | |
|------------------------------------|-------------------------------|--|
| Food Sector Support Program | Execution period: 2018 - 2022 | ➤ Install and equip 100 nurserymen for irrigated production of cuttings of high-performance cassava varieties; |
|------------------------------------|-------------------------------|--|

e. Number of private seed companies operating in the country and an annual quantitative estimate of their seed production

Board 12: The companies and individual producers involved in the production of certified seed are as follows

| No | Seed companies | Crops concerned | Average bid annual |
|----|----------------|--|--|
| 1 | CNRA | Cereals : Rice, Corn, Soybeans, Vegetable crops : Tomato, Okra, Eggplant, Pepper, Tubers: Yam, Cassava, Cash crops: Cocoa, Coffee, oil palm, Hevea, Cotton, etc. | These are first generation seed productions (pre-base and base): 50 tons / year |
| 2 | BFGD | Cereals : Rice, Corn, Wheat, Cowpea, Peanuts Vegetable crops : Onion, Tomato, Eggplant, Pepper, Okra, Shallot, etc. | Cereals : Vegetable crops : |
| 3 | SPV - CI | Cereals : RICE, CORN Vegetable crops : Chilli pepper ; okra; Eggplant Plantain: Plantain | Rice: 100 to 200 tonnes / year Plantain: 38,000 vitro-plants Cocoa: 20,000 plants |
| 4 | AGRO-SERVICES | Cereals : Rice, corn, cowpea, millet, peanuts Vegetable crops : Tomato, chili, eggplant, okra, cucumber, zucchini, squash, cabbage, celery, pepper, onion, watermelon, melon, lettuce, basil, nightshade, | On average, 200 tonnes per year |
| 5 | CALLIVORY | Vegetable crops : | 02 to 03 tonnes of vegetable seeds |
| 6 | BILHOF | Cereals : Rice; But ; Soy ; Tubers: Cassava Vegetable crops : Tomato, Pepper; Pepper ; Lettuce | RICE: 195 tonnes Maize: 200T of Cassava: 20,000 Cassava cuttings, BOCOU 1 variety |
| 7 | SEMIVARY | Cereal and vegetable crops: rice, corn, okra; bean; blond Paris lettuce; parsley; pepper; chilli pepper ; tomato; | Between 02 and 03 tonnes of vegetable seeds |

| | | | |
|---|---------------------------|---|---|
| 8 | GSN Semences CI | Vegetable crops : Tomato, Onion, Pepper, African Eggplant, Carrot, Pepper, Okra, Grass ... | 12 to 15 tonnes of seeds per year. |
| 9 | APROSEC | Cereals : Rice, Corn; | Rice : 45 Tons But : 22 Tons |
| 10 | ORIZA | Cereals : Rice; But | Rice : 32 tons / year But : 12 tons / year |
| 11 | SIPRODIS | Rice | 20 to 35 tons / year |
| <i>Some individual producers</i> | | | |
| 1 | YAO KOUAKOU Marcel | Rice | 10 to 15 tons |
| 2 | BAMBA Abdoulaye | Rice | 5 to 10 Tons |
| 3 | KOUAKOU Bernard | But | 5 to 10 tons |
| 4 | KOUMOUE HENRI | Rice | 5 to 10 tons |

f. Non-governmental organizations and farmers' organizations involved in the production and supply of seeds

There are seed production groups / cooperatives, but only in the food crop and mainly in the rice and corn sectors. In the sectors of export crops (coffee, cocoa, cashew, rubber, cotton, etc.), there are approved nurserymen.

f.1. Formally recognized agricultural seed-producing cooperatives.

In Côte d'Ivoire, following the post - electoral crisis of 2011, many cooperatives have disappeared. Thanks to the WAAPP / PPAAO, some have recovered, but with difficulty.

The formally recognized agricultural seed cooperatives are:

Board 13: List of agricultural cooperatives involved in seed production

| No. | Cooperatives | Location | Speculations | Contacts | |
|-----|---------------------|---------------|---------------------------|---|-----------------------------------|
| | | | | PCA | Manager / President |
| 1 | WOMIENGNON | Korhogo | Rice, Corn | KELEMORY | SORO TAMIGUE 05 22 52 43 |
| 2 | CHONGAGNIGUI | Korhogo | Rice, Corn, Vegetables | YEO Naminata 45 12 14 67 | YEO FANTA TIAWA 06 37 84 76 |
| 3 | KONIFAK | Kagbolodougou | Rice, Corn | S / C of CHONGAGNINI | |
| 4 | CHIGATA | Napie | Vegetables | | |
| 5 | KATANAN | Natio | Vegetables | | |
| 6 | BINKELEMAN | Dopiankaha | Vegetables | | |
| 7 | WEWEDJO | Nahoualakaha | Vegetable | | |
| 8 | COORIA | Aboukro | Rice, corn | Kangah Kouassi 49 09 37 89 | KANGA KOFFI SERAPHIN 47072096 |
| 9 | COPRORIZ | Nanan | Rice | Beugré Albernanty 07828811 55280344 | N'DAH KONAN Clement 58487396 |
| 10 | AGREEMENT | Nanan | Rice, Corn, | Yao Kouakou Marcel 05424069 09436129 | Kouakou Kouame Frejus 77847799 |
| 11 | CORIBKSY | Subiakro | Irrigated rice | <u>President:</u> Konan Kacou Théodore 08022214 | |

| | | | | |
|----|--|------------|---------------------|--|
| 12 | UNION OF COOPERATIVES OF THE VIVRIER OF THE MOUNTAINOUS WEST | Man | Rice, Corn, Cassava | <u>President</u> : Zodi Simone (57 54 35 47) |
| 13 | CODERIZ ZOUEUSSEU | Biankouman | Rice | President: Bamba Sahi 08 36 40 38 |
| 14 | SCOOPS ADOKE | Man | Rice | President: BAMBAM KANVALY (49 65 56 33) |
| 15 | SINIKOSSON SCOOPS | Facobly | Rice | President: BELEM (87 67 55 68) |
| 16 | KOUAKOUNGBE SCOOPS | Sipilou | Rice | President: LOHI Sadia (08 99 30 49) |

f.2. The four (4) best structured seed producer cooperatives

Four of the seed-producing cooperatives are emerging, including two in the center and two in the north of the country. Below, the clues.

Board 14: List of the best structured cooperatives in seed production

| COOPERATIVES | COOP-CA COPRORIZ YAKRO | COOP-CA AGREEMENT | WOMIENGNON | CHONGAGNIGUI |
|--|--|---|---------------------------------------|-------------------------------|
| brief description | | | | |
| Organization type | Cooperative company with board of directors | Cooperative company with board of directors | Cooperative Society | Cooperative Society |
| Location (exact location) | Headquarters are in Yamoussoukro (Nanan village) | NANAN (Department of Yamoussoukro) | NATIOKOBADARA (Department of Korhogo) | KARAKORO, on the airport road |
| Number of members | 298 including 18 women | 20 including 1 woman | 2000 | 4236 |
| Number of farmers affected by the seeds of the cooperative | 93 | 10 | 700 | 160 |
| Crop portfolio | | | | |

| | | | | |
|---|---|--|--|---|
| types of crops (speculations) | RICE | RICE | Irrigated rice | Corn, rice, vegetables |
| Other products, activities, services | Collection, storage and marketing of agricultural products, Phytosanitary tests | Rice marketing, Phytosanitary tests | RAS | Cereal processing unit, cashew nut shelling |
| Business model | | | | |
| Breeding program or interaction with breeding institutes (breeding, testing of new varieties) | YES (CNRA, AfricaRice, BAYER) | YES (CNRA, BAYER) | ONDR (CY2, Bouaké AM, Wita9) | GIZ, UNDP, FAO |
| Production | YES | YES | Yes | Yes |
| Processing | None | None | None | None |
| Distribution | To members and other farmers | | To the members, but difficult reconstitution | To members and reconstitution |
| Organizational capacity | | | | |
| Official recognition by the authorities | CI.TDI APPROVAL. 2016. B. 20 OF JULY 13, 2016 | CI-TDI APPROVAL. 2015. B. 019 OF AUGUST 21, 2015 | Yes | Yes |
| Governance model | A Board of Directors | A Board of Directors | Cooperative company with board of directors | Cooperative company with board of directors |
| Technical staff | A MANAGER, AN AGRICULTURAL DELEGATE, AN ACCOUNTANT | 1 MANAGER, 1 Secretary General, 1 TREASURY | There is none left | Not |
| | | | | |

| Impact and maturity | | | | |
|---|--------------------------------|---|-----------------------------|---|
| Geographic coverage (local, national, regional) | National | Local | Regional | Regional |
| Volumes | 650 tons / cycle | 50 tons / cycle | 60 T | 83 Tons / cycle |
| Number of farmers reached by products and training | 298 | 20 | 32 | 3 departments |
| Number of farmers involved in production | 298 | 20 | 120 | 160 |
| Special programs for women and youth | YES | None | RAS | In collaboration with GIZ, PARFACI, HKI |
| Good practices | | | | |
| Using ICTs to reach farmers | Fleet network | Fleet network | Fleet network | Fleet network |
| Capacity building programs for farmers, introducing good agricultural practices | Technical production routes | Training program: Intensive Rice Cultivation System (IRS) | Yes | Yes |
| Special programs for women farmers | None | None | NORTH RICE SRI (FIRCA) | PARFACI, INADESCI, GIZ, FAO |
| Introduction of new varieties to the market | None | None | Yes (Wita9, CY2, Bouaké AM) | Yes |
| Promotion of local cultures | Yes | Yes | Yes | Yes |
| Launch of new / unique crops on the market | No | No | No | No |
| Creation of links between farmers and product markets | No | No | No | No |
| Partnership with seed companies | YES (ONDR, FIRCA (WAAPP), AMC) | YES (ONDR, GAN LOGIS) | No | No |
| Partnership with research institutes | YES (CNRA, AfricaRice) | YES (CNRA) | No | no |

| | | | | |
|---|---|---|---|---|
| Feedback from farmers for product development | YES (information from the agricultural services on the appearance of new diseases or insects) | Yes (information of the agricultural services on the appearance of new diseases or insects) | Yes (information of the agricultural services on the appearance of new diseases or insects) | Yes (information of the agricultural services on new diseases or insects) |
|---|---|---|---|---|

g. Existing infrastructure for seed treatment and conditioning

Côte d'Ivoire has two large seed treatment units. One, based in Yamoussoukro, is managed by ADERIZ, which is a state structure.

The second unit managed by the private sector is located in Bongouanou (South-East of the country). This unit was dedicated to the processing of coffee cherries, until 1994 when the State withdrew from the production and marketing of coffee and cocoa. This unit was therefore privatized and changed function.

h. Quantity of certified seeds marketed during the last five years, by crop

The quantity of seeds marketed in recent years is measured from the annual seed certification report for each crop recorded in the table below.

Board 15: Review of seed certification from 2013 to 2019

| | Year 2013 | | | Year 2015 | | | Year 2016 | | |
|-------------------|-----------------|----------------|----------------|-----------------|---------------|---------------|-----------------|---------------|---------------|
| Cash | Certified seeds | Seeds refused | TOTAL (kg) | Certified seeds | Seeds refused | TOTAL (kg) | Certified seeds | Seeds refused | TOTAL (kg) |
| Rice | 483 210 | 365,460 | 846,670 | 11,000 | 11,400 | 22,440 | 37 102 | 6,098 | 43,200 |
| But | 16 851 | 0 | 16 851 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL (kg) | 500,061 | 365,460 | 863 521 | 11,000 | 11,000 | 22,440 | 37 102 | 6,098 | 43,200 |

| | Year 2018 | | | Year 2019 (partial) | | |
|-------------------|-----------------|----------------|----------------|---------------------|---------------|----------------|
| Cash | Certified seeds | Seeds refused | TOTAL (kg) | Certified seeds | Seeds refused | TOTAL (kg) |
| Rice | 283 510 | 165,000 | 450 510 | 100 240 | 16,720 | 116 960 |
| But | 10,900 | 0 | 16 851 | 11,475 | 0 | 11,475 |
| Soy | | | | | | |
| TOTAL (kg) | 294,410 | 365,460 | 461,410 | 111 715 | 16,720 | 128,435 |

i. Number of small and medium-sized enterprises operating in the agricultural / seed sector currently in operation, by region

The SMEs intervening in the agricultural / seed sector in activity, are those listed in table 13

j. Import level of certified seeds, by crop

Only standard seeds of vegetable crops are imported in large quantities into Côte d'Ivoire by the firms. The quantity of cereal seeds imported from neighboring countries is extremely negligible.

k. Prospects for improving the seed sector

These are government initiatives. The Ministry of Agriculture and Rural Development, with a view to making seeds available to producers, introduced a seed component in all agricultural projects. This is the case of the FAO, PROPACOM, 2PAI-Bélier, PARFACI and development poles projects ...

5. National strategic plan for the seed sector

a. Administrative formalities for seed production

To produce seeds in Côte d'Ivoire, it would be necessary to hold an approval issued by the SOP of the ministry in charge of agriculture. The conditions for obtaining this approval/accreditation of producers and multipliers of seeds and plants are :

- have the technical knowledge in the matter or use a seed technician approved by the Ministry of Agriculture;
- provide the contract that binds you with the seed technician (natural or legal person);
- send a request to the Minister in charge of Agriculture;
- complete an authorization request form (to be collected from the DPVSA);
- provide a photocopy of the CNI or residence permit of the Manager;
- sign a commitment to comply with the annexed technical regulations as provided for in Article 58 of Regulation C / REG.4 / 05/2008 relating to the harmonization of the rules governing the quality control, certification and marketing of plant seeds in the ECOWAS area;
- dispose of land (title deed or contract to purchase or lease the land);
- for cooperatives or associations, provide a copy of the approval;
- have appropriate equipment installed (suitable storage warehouse, scale, weighing scale, etc.);
- pay the single registration fee

b. Administrative formalities for the registration of new varieties

An improved variety, before its official publication or approval, must meet specific criteria which are verified by the approval committee or commission, responsible for officially recognizing certain standards after verification of compliance.

This approval is the last step in the selection process at the end of which the new variety can be released. It makes it possible to unequivocally establish the originality of the variety through two tests which take place simultaneously:

- Distinction, homogeneity (uniformity in English) and stability (DHS) tests;
- Agronomic and technological value tests (VAT).

Distinctness, homogeneity and stability (DHS) tests

- **Distinction:** a variety is distinct if, at the time when admission is requested, it is clearly distinguished by one or more important morphological or physiological characters from any other variety admitted or presented for admission to the catalog.

The distinction is made on the basis of descriptors recommended by either UPOV or IPGRI.

- **Homogeneity or uniformity:** a variety is sufficiently homogeneous or uniform if the plants which compose it (apart from rare aberrations) are, taking into account the peculiarities of their reproduction system, similar for all the characters selected for this purpose.
- **Stability:** a variety is said to be stable if, following its successive reproductions or multiplications or at the end of each cycle, if the breeder has defined a particular cycle of reproduction and multiplication, it remains in conformity with the definition of characteristics essential.

Agronomic and technological value tests (VAT)

The VAT tests are intended to assess the value of use of new varieties by the farmer or by the industrialist.

The examination and experimentation of the varieties of rice presented for their approval are carried out according to a very precise protocol by an independent body of breeders.

The DHS and VAT tests are simultaneous and last for a minimum of two years for annual species such as rice and can be extended by one year if further study is necessary.

Issuance of an evaluation report for the approval and registration of the variety in the Catalog of Plant Species and Varieties of Côte d'Ivoire.

Submission of the variety to CONASEM for admission or not to the catalog

If CONASEM gives its approval, a registration decree is submitted to the Minister in charge of agriculture for signature.

c. Administrative formalities for the certification of new varieties

c.1. Definitions:

- According to the FAO, certification is a system of quality control, based on a law and applied to the multiplication and production of seeds (FAO, 1969).
- According to French law, this is the outcome of a control process allowing an official authority to ensure that the seeds produced:

a) possess a minimum of varietal and genetic purity;

b) are, according to general principles:

- parentage;
- the consistency of varietal characteristics obtained by a system of conservative selection corresponding to the species;

c) meet technological and sanitary standards. (French technical regulations).

It is therefore the culmination of a process of field crop inspections, analyzes and tests in the seed laboratory. It ensures that the seeds comply with the minimum standards of varietal purity.

It is based on genealogical descent and on a system of conservative selection of their varietal characteristics, in accordance with the provisions of the technical regulations in force.

c.2. The process :

1) Culture statement

- Document or form to be completed by natural or legal persons registered on the list of seed producers
- Any seed crop establishment must be declared on a form issued for this purpose. This declaration must reach the SOC before the cultivation is set up.
- Any operator who has produced the required declaration is required to allow the agents mandated by the SOC to enter his operation and his stores in order to carry out any control operation deemed useful.

2) Admission to the test

- It is granted to any natural or legal person who requests it.
- It is provided by the SOC or any other approved private body, for one or more species listed in the catalog and, for each of them, for one or more categories of seeds as defined by the regulations.

NB: Any application for admission is sent to the SOC or any other approved private body, on an appropriate form before the opening of the agricultural season.

- The SOC or any other approved private body studies the request and ensures that the admission conditions required by the regulations in force have been met.
- The refusal or acceptance is notified to the applicant within fifteen (15) days following the filing of the request.
- When the SOC or any other approved private body considers it necessary, it may grant an additional ten (10) days to the applicant, for the filing of a new application or for additional information.
- Admission criteria
 - **General criteria**
- Any natural or legal person who wishes to be admitted to the control must meet the following conditions:
 - Commit to respecting technical regulations;
 - Have sufficient land;
 - Have sufficient and qualified technical staff; have appropriate facilities and materials.
 - **Specific criteria**
- The specific criteria are fixed by the annexed technical regulations according to the characteristics of each species.

3) Crop inspections

- This procedure remains the most difficult and complex.
- 2 to 3 inspection visits to seed fields are compulsory depending on the species. Sometimes a 4th visit may be necessary.
- Each visit is sanctioned by an inspection report

4) Constitution of lots

- This step occurs after obtaining the results of the available production.
- Lot size varies according to the species and category of seed produced.
- The different seed lots are made up as provided for in the annexed technical regulations.

5) Sampling

- The reliability of quality control depends first of all on the correctness of the sampling technique.
- For this reason, the International Seed Testing Association (ISTA) has established international rules, fixing the modalities and techniques for sampling and analyzing seeds. The elements to take into account are:
 - the size of the lot to be sampled;
 - the packages.
- Before proceeding with the sampling, you must first:
 - Check that all the packaging concerns the same variety and belong to the same lot (labeling)
 - Check the identification of the seed lot
 - Check the size of the seed lot
- Check the physical separation of the packages from the lot
- Does the packaging have a unique identification?
- Are the packaging sealed?
- Are all parts of the seed lot accessible for collection?
- Is the seed lot sufficiently homogeneous?

NB: If one of the conditions is not met, no sampling is possible

6) Seed control in the laboratory

- Verification of the final results from production to packaging and storage of seeds through:
- Specific seed purity analysis;
- Analysis of the germination capacity of seeds;
- Analysis of the moisture content of seeds;
- Others (health status, genetic purity, etc.).

7) Certification attestation

- An administrative document issued on the basis of the correct result of the examination of the following points:
- Field inspection reports;
- The conditions of conditioning and storage of seeds;
- The results of laboratory analyzes of samples of seed lots.

8) Labeling of certified seeds

- **Pre-basic seeds:** For pre-basic seeds (3rd generation G3), the color of the label is white with a purple stripe
- **Basic seeds:** For 4th generation G4 seeds, the label color is white
- **R1 seeds:** For certified seeds of 1st generation after the base, the color of the labels is blue
- **R2 seeds:** For certified seeds of 1st generation after the base, the color of the labels is red

9) Inscriptions on labels

- 1 - the name of the culture
- 2 - the name of the variety
- 3 - the% of seeds of pure culture

- 4 - the% of seeds of other crops
- 5 - the% of weed seeds
- 6 - the% of inert matter
- 7 - the% of germination
- 8 - the moisture content of the seeds
- 9 - the name of the producer of the seed
- 10 - the year of production
- 11 - the lot number

- Make sure that all labels are completed and signed by the official certification service;
- Finally, it is necessary to ensure that all labels are affixed in accordance with regulatory provisions;
- L'certification certificate is finally issued to its applicant.

10) Lot identification and label numbering

Lot identification

- Campaign or harvest year:
- Species:
- Variety:
- Category: basic seed G4
- Varietal purity:
- Germinative faculty:
- Origin:
- Bag weight:
- Lot number:
- Treatment product:

d. Inventory of bodies responsible for the regulation and certification of new varieties

- *Staff*

Coordination service: 2 agents;
 Seed inspectors: 5 agents;
 Seed controllers: 38 agents;
 Laboratory technicians: 6 agents

- *infrastructure*

The only Seed Analysis Laboratory (LANASEM) in charge of seed testing is under-equipped with a low capacity. On average 200 samples analyzed each year.

e. Inventory of basic seeds

To maintain its international position in agriculture, the State invests a lot in it. Quality seed has been identified as a key factor in the success of its agricultural policy. Unfortunately, the production and supply systems for quality seeds have been disrupted since the dissolution of the seeds and plants office, the liberalization of the seed sector and the withdrawal of the State which took place without any accompanying measures.

f. Procedures for the production and supply of basic seeds

- Access of private seed companies to basic seeds

Scientific agricultural research in Côte d'Ivoire is essentially entrusted to the CNRA, which is a state structure. The search results obtained are automatically in the public domain. Access to basic seeds is at the request of the company concerned.

There are two levels of collaboration for the supply of seeds produced by the CNRA to structures involved in seed production. These are annual agreements with the seed sectors such as coffee-cocoa, cashew nuts, palm trees, etc. In this specific case, these sectors sign the agreements specifying the speculations in question and the quantities. The second type of collaboration is established between the CNRA and the projects which request the production of pre-basic or basic seeds according to their needs. Sales are made according to the availability of seeds at the CNRA level.

- Policies in place for the provision of basic seeds by the private sector

In addition to the production of good quality seeds of improved varieties from CNRA, there are imports of standard seed and conventional seeds from other countries, especially those of ECOWAS.

6. Summary and conclusions

a. Current state of access to improved seeds among smallholders

The State has made large investments to install a seed circuit built around a public-private partnership. This seed circuit poorly adapted to the realities of farmers in rural areas (student cost, lack of information, etc.) is a brake for this category of farmers who are forced to move towards "all-round" seeds. Seed distribution efforts to producers and production through the projects remain insufficient.

b. Government contribution and support for the improvement of seed systems

In terms of legislation and regulations, there are national (decrees, orders) and community (ECOWAS and UEMOA regulations) regulatory texts for good governance of the sector. Thus, the Government of Côte d'Ivoire has issued several decrees, orders and regulations to organize the seed sector in the country. It's about :

- ✓ Decree n° 92-392 of 01 July 1992 relating to the approval and protection of plant varieties, to the production and marketing of seeds and plants.
- ✓ Regulation C / REG-4/05/2008 of May 18, 2008 harmonizing the rules governing the quality control, certification and marketing of plant seeds and plants in the ECOWAS / ECOWAS area;
- ✓ Decree No. 2013-678 of October 2, 2013 establishing the national catalog of plant species and varieties cultivated in Côte d'Ivoire;
- ✓ Decree n ° 2013-679 of October 2, 2013 establishing, attributions, organization and functioning of the national committee of seeds and plants;
- ✓ Order n ° 121 / MAG / DGA of September 16, 2014 on the creation, attribution, organization and functioning of the National Committee of Plant Seeds (CNS)

- ✓ Order n ° 197 / MAG / DGA of September 28, 2015 amending and supplementing Order n ° 121 / MAG / DGA of September 16, 2014 relating to the creation, attribution, organization and functioning of the National Plant Seeds and Plants (CNS).

The objective of the Ivorian Government through the development of these decrees, orders and regulations listed above is the implementation of the strategy to revive food production with the focus on the development of crops related to the household food security, coverage of consumption needs, particularly rice, as well as the development of production activities for staple crops such as rice, maize, cassava and yam.

c. Prospects and opportunities for improving seed systems

Côte d'Ivoire has many assets:

- Favorable natural conditions (climate, rainfall, etc.) which allow the production of several plant species;
- The will and initiatives of the government in terms of agricultural development and improvement of food and nutritional security;
- The existence of an institutional framework;
- The existence of significant capacities and resources (human and material) at the level of certain institutions (minagri, cnra, ondr, anader);
- The existence of a large range of performing varieties developed by research for a large number of speculations;
- projects supported by development partners to ensure the availability of quality seeds.

These different assets represent enormous opportunities, the exploitation of which is a source of improvement of the seed system in Côte d'Ivoire.

d. Recommendations

- Deepen and complete the study.

We presented some experiences in progress in Côte d'Ivoire. It would be useful to continue the work by allocating more resources to:

- Take into account the experiences of projects, OPAs, NGOs for all regions; -
- Promote the previous work carried out in the period 1980 - 2000;
- Organize the return of this study to stakeholders in the seed sector to let them know the situation of the seed sector in their country.

The continuation of this study could rely on the network of specialists in management advice and marketing support.

- Make farmers as responsible as possible.

Without denying the central role of advisers and facilitators in improving the management of farms and the marketing of agricultural products, farmers should not be placed in a position of permanent assistance. Through ongoing training and regular monitoring by advisers, farmers should be able to carry out certain economic calculations themselves, draw up a campaign plan and assess their investment capacity. Likewise, they must be able to understand the functioning of their activities and participate in their management.

- Enhance agricultural and university training.

The specificities of farms deserve to be better taken into account in teaching economics and business management. To do this, educational structures should be given the means to organize study trips so that they learn about the experiences in other regions. On this basis, it would be possible to review the teaching programs by integrating the analysis of the methods and tools of seed plot management.

- Train rural development agents and staff of farmer organizations in seed production techniques.

The dissemination of these methods implies continuing to develop them but also training rural development support staff. Côte d'Ivoire currently has a large number of ANADER agents. Producer organizations recruit staff to develop their services and set up their networks of cooperatives. The training of these agents must be continued and diversified, taking into account the objectives of each management structure.

e. Impacts and spin-offs of better access of smallholders to improved seeds

Improving the access of smallholders to improved seeds will make it possible to solve in a sustainable way the supply problems of all categories of farmers seeking improved seeds. The grower will have a wide range of choices available and will use “good to sow” seeds for increased yields. Seed market information and marketing distribution systems will be improved.

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