



WAAPP / PPAAO
WEST AFRICA AGRICULTURAL PRODUCTIVITY PROGRAMME
PROGRAMME DE PRODUCTIVITE AGRICOLE EN AFRIQUE DE L'OUEST

Key Results in Mali



December 2018

Mali



The Government of Mali invested, during the period 2008-2018, a total of **\$US 75 Million** to increase the productivity of rice (irrigated & rainfed), livestock (dairy and meat) and horticulture (tomatoes, onion & potatoes) and dry cereals value chains. The main activities supported were:

- i. Research and development infrastructural construction and rehabilitation and equipment procurement;
- ii. Training of young scientists and extension agents;
- iii. Technologies and innovation (T&I) generation;
- iv. T&I dissemination for broad adoption.

Major Research & Development; Infrastructural construction & equipment (2008 - 2016)

\$US 5.2 Million



Major Renewal of research-development personnel (2008 - 2016)

\$US 1.5 Million

149 Young Scientists Trained

Technologies dissemination between 2008 - 2016

\$US 16.448 Million

380 000 farmers adopted on **543 559** ha



Major Research & Development activities between 2008 - 2016

24 Technologies and Innovations Released

\$US 26.46 Million

Success Stories



Off-Season Rice Fends off Malian Farmers from Climate Stress

Fifty-five-year-old Boureima Sanogo has been cultivating rice since he was 15. With traditional cultivation methods on a hectare of land in the rainy season, the most yield he could get was four tons.

But since the introduction of a new cultivation method known as the System of Rice Intensification (SRI), an improved water management system, and drought-tolerant seed varieties, not only does he cultivate twice a year, but his yield also has doubled. Sanogo now produces about 14 tons of rice every year.

This dad of 14 kids and two wives owns about two hectares of land in the rice fields located in San, about 450 kilometers East of Mali's capital, Bamako. Before SRI, his maximum yearly income barely went above 500,000 FCFA (USD 1000).

But when you include off-season cultivation, he now makes close to 2.5 million (USD 5000) from his 14 tons. One ton of rice now sells in Mali at about 175,000 FCFA (USD 350).

For a country where most people, particularly in rural households, live on about USD 2 per day, this is considerably above the country's median income.

When we met him in the rice plains in San, Sanogo looked relaxed and happy at this year's off-season production.

"Next week, we shall begin harvesting. This will mark the end of the off-season. After that, we shall begin working on the cultivation for the regular season," said Boureima Sanogo.

Experts say off-season cultivation starts from December through May while the regular season begins in June and ends in October. Mali experiences some rainfall during the later period.

SRI Turns Drought to Irrigated Rice fields

Traveling through vast swaths of land in Mali in May can be particularly challenging because of the excruciating heat and high temperatures. With unpredictable rainfall, drought, and fluctuating weather patterns due in part to the changing climate, experts say, practicing agriculture can be extremely challenging. With degrading soils and inadequate farm inputs, the situation becomes even more desperate for small-scale farmers in particular.

But thanks to an agro-ecological, climate-smart and low-input methodology known as SRI, about 400 hectares of irrigated rice fields were cultivated between December 2017 and May 2018 in San, Mali,

“Climate change is a reality. But here in San, our rice fields are supplied by a water irrigation systems. This is what makes off-season rice cultivation possible,” says Sanago.

About 5000 farmers have constituted themselves into an association in San. They are called The Rice Farmers Association of the developed plains of the western San (APPASO). Thanks to their collective efforts, a channel irrigation system is allowing farmers access to water in their fields, helping them grow rice throughout the year and managing better worsening drought associated with climate change in Mali.

“Without this system, it will be impossible to stand the drought. Off-season rice cultivation is also impossible without a well-managed irrigation system,” says Ali Sanago, Technical adviser of APPASO.

“There are many advantages of SRI. Compared to our previous cultivation methods, fewer seeds are needed under SRI. Yields are higher under the SRI, and we use less water even in the off-season,” says another practitioner of SRI in San, Assie Togola

Scaling up SRI to Achieve Rice Self-Sufficiency in Mali

Experts have argued that if SRI is to make a real contribution to rice self-sufficiency in West Africa, many more farmers must adopt it.

“How many farmers must be reached before we reach the “tipping point” where SRI becomes the standard for rice cultivation in West Africa? A possible target for the follow-on project could be a farmer adoption rate of 33%, reaching 1.5 million rice farmers and 2.43 million hectares,” wrote Dr. Erika Styger and Dr. Gaoussou Traoré, authors of a recent publication on SRI in 13 West African countries,

“If 100% of rice farmers in West Africa had used SRI in 2017, rice self-sufficiency would already have been achieved with a 5% surplus. Replacing rice imports with rice grown in the region would have saved 4.16 billion USD in foreign exchange for 2017 alone,” they added.

Some Recommendations to Scale up SRI in West Africa

- Expand national and regional coordination
- Let farmers and farmer organizations take the lead
- Refine and assure quality of technical training
- Emphasize adaptation and innovation
- Reinforce and improved the SRI monitoring systems
- Expand the communication platform





At a moment when lack of funding and technical skills are impeding the growth of poultry farming in Mali and most of West Africa, retired commissioner of police Yaya Sangare has raised ample capital, infrastructure, labor, and other inputs to set up a poultry farm that today supplies the local market in Bamako.

The Man Championing Wassachiè, Mali's 'Favored' Chicken Specie

Located on the outskirts of Mali's capital, Bamako, Yaya's farm harbors about 4000 chickens, most of which are Wassachiè, a local strain relished by producers and consumers. 'Wassachiè' means 'chicken of satisfaction' in the Bambara language spoken in most of Mali.

Reducing poverty, and improving food and nutrition security remain major challenges in many West and Central African countries where an estimated 40% of children under five are affected by stunting, 12% suffer from acute malnutrition, and 75% are affected by anemia.

According to the United Nations, Food and Agriculture Organization increased consumption of eggs, and poultry meat brings substantial benefits to humans. But the consumption of poultry products is still a luxury in most parts of Sub Sahara Africa, while there is a high need for animal protein.

Why Wassachiè?

Part of the mandate of the West Africa Agricultural Productivity Program (WAAPP) created in 2008 was to propose innovative solutions to increase agricultural productivity to further cement the food and nutrition security of people in the participating countries.

In Mali, as part of its work to generate and disseminate innovative technologies to improve the livelihoods of communities, WAAPP determined after extensive research that the exceptional genetic properties and improved characteristics of Wassachiè made it a unique breed with the potential to boost the poultry industry while contributing to the nutrition security of Malians.

Compared to other types of chicken, experts argue that Wassachiè is more resistant to diseases, nutritive, taste better, and hatches more eggs. The adult female lays up between 160 to 170 eggs per year compared to 60 to 80 eggs for local breeds.

Fending off competition from the 'Cheap' Broiler Chicken

The advantages notwithstanding, Wassachiè's adoption has not reached the desired levels where ordinary Malians can afford it and further improve their nutrition security. This is due in part to the relatively high cost of Wassachiè, says the president of an association of Wassachiè producers in Bamako.

While many agree that it is comparatively better in terms of nutritive value and adaptation to the local environment, uptake has not reached the coveted levels.

"Malians are used to broiler chicken. It cost between 1700 to 2000 FCAF (USD 4). But Wassachiè cost averagely 3500 to 3700 FCAF (USD 7)." says Yaya.

Incentivising Wassachiè producers may be the best possible alternative to ensure they remain competitive in a market so far dominated by boiler chicken producers and consumers.

"Despite the cost, we still see Wassachiè as the future of the poultry industry in Mali in a sense it offers a tremendous opportunity to make available highly-nutritive chicken for our population," according to WAAPP Mali.

"We hope the state could provide us subventions," says Moussa Maguiraga, President of the Wassachiè Chicken Producers Cooperative of Bamako.

"If the current high demand for Wassachiè tells us anything, it is that consumers value taste over price. Most of the order coming from hotels and restaurants in and around Bamako demand that Yaya supplies them exclusively Wassachiè.

"When the Loft Restaurant in Bamako, for example, places an order for chicken, they insist that it should be Wassachiè and nothing else," says Mr. Yaya.

"When I inform them that I do not have enough, they insist that I obtain it from other producers,"

Could the Innovation Platform Unlock the Upscaling Challenge?

Recognizing the need for further dissemination to ensure the massive uptake of Wassachiè production, WAAPP

Mali is leveraging the potential of innovation platforms to facilitate the uptake of production in major regions such as Koulikoro, Sikasso, and Ségou.

"Innovation platforms brings together actors of a particular value chain. In our case, we are bringing together actors in corn production from which chicken feed is produced as well as women groups since most of those involved in rearing Wassachiè are women," says Mr. M'pie Bengaly, Head of the WAAPP Innovation Platforms.

Could the Innovation Platforms Solve the Credit and Involvement of Youths and Women?

In Burkina Faso, innovation platforms offered an engagement and discussion opportunity between producers of cowpea, women, and credit unions. Through these platforms, credit unions learned more about the potential of cowpea and the opportunity to invest in it. With this clarity, they could easily loan money to women groups.

In Mali, the innovation platforms may be opportunities for actors to further engage and grow the sector to the expected levels.

"In Kolokani in the Koulikoro region of Mali, groundnut and sorghum seed producers came together with credit union and bankers on one of our innovation platforms. Seeing the seriousness and engagement of the producers, they were linked up with banks and credit unions. If bankers are confident and sense the credibility of the actors, you start to see solutions to the credit and loan challenge."

Not Much is Needed to Get Started

Retired Yaya Sangare might be close to 1 billion FCFA (USD 2 million) investment today. But he argues that he started off just with a few houses on a relatively small piece of land.

While he acknowledges that growing the business requires considerable funding, land, infrastructure and other inputs, those desiring to start-up should not be discouraged.

Based on the success he has achieved, others come to him for counseling.

"Most of the employers who are women and young people have asked that I pay them in kind. So at the end of the year, they take chicken equivalent to their salaries for the whole year. This allows them to start up their poultry farms," says Yaya.

"What I have also told others is that you do not necessarily need so much infrastructure and money to get started. With about 200 chicks, land, and the right mind frame, you can get started."



Surviving the «Lean Season» through the production of rainy season tomatoes

Ba Issa Traore, is a market gardener in the city of San, located 437 km northwest of Bamako (capital of Mali) near the Segou region. A region in which the WAAPP introduced three varieties of high yield rainy season tomato, pest-resistant. Improved crop techniques that have enabled farmers to improve their yields through crop harvesting throughout the year.

Before, Ba Issa Traore as many other farmers of the locality were unaware of improved techniques on producing tomato during rainy season. The tomato was cultivated only during dry season, often in swamps. Most planting tests during rainy season have always resulted in the deterioration of over three quarters of crops given the high vulnerability of tomatoes to pest infections. The production was always insufficient and the community was facing a severe shortage of tomato.

The few tomatoes available was poor in terms of quality and was selling at a price not always accessible to the average consumer. Yet the tomato is a product of mass consumption, present in all culinary preparations in Mali.

For more than 3 years now, farmers from San are living comfortably from the exclusive tomato production through the introduction of three (03) improved varieties in Mali developed by the Centre of Specialization on Fruits and Vegetables in Burkina Faso under the West Africa Agricultural Productivity Program (WAAPP).

The new varieties have helped to ensure a constant supply of tomato to markets and increase the income of market gardeners.

«I grow my tomatoes on a land of 600m². After each harvest I make a profit of 35,000 f CFA (75 US dollars) or even more. During the production cycle I can harvest from 10 to 12 times «says Ba Issa Traore. With the improved techniques introduced by WAAPP, Ba Issa Traore and his community are fully prepared to face the lean season that correspond to times when the previous harvest is depleted while new crop is still growing. «The improved tomato allows me to replenish food supplies such as rice and millet to feed my family during the lean season,» says the market gardener.



Meet the 'Next Generation' of West African Agric Scientists

Agriculture research and development (R&D) in West Africa was in a bleak state in 2008. Several analyses at the time concluded that majority of PhD-qualified researchers were due to retire by 2025 creating a void in the quest for innovative solutions to tackle pressing and emerging challenges facing agricultural development.

Against the growing threat of climate change, weather fluctuations, soil degradation, population growth, gender disparities, youth unemployment, etc. West African countries recommitted to invest in the training a new generation of agriculture scientists to take on these challenges.

With a loan from the World Bank and the support of CORAF, about 13 West African countries involved in the West Africa Agriculture Productivity Program funded post-graduate studies for young researchers.

Overall, about 1000 young scientists including about 30 percent women received scholarships to pursue master degrees and Ph.Ds. in priority areas. The Faculty of Agri-

culture and Forestry of the University of Ibadan in Nigeria hosted students from Mali, Guinea, Niger, Benin, etc. as part of efforts to enhance regional cooperation through agricultural research. Some went as far as Europe to obtain their post-graduate certificates.

About ten years after, several independent analyses have concluded that the program has made a substantial contribution to improving the West Africa R&D capacity.

But What are they Doing?

With studies over and certificates in the bag, we wanted to investigate the fate of the beneficiaries of this program.

What have they become? What are they doing? Are they contributing to research and development?

Successfully tackling the challenges facing agriculture in the region requires a set of the out-of-the-box thinking scientist who can develop 'cool' technologies such as sensors, self-driving tractors, and other digital tools to help transform agriculture.

With government no longer able to absolve every young person looking for a job, do these young talents have the ability to start-up in agribusiness?

In short, did these investments generate a new breed of biologists, chemists, engineers, and scientists who can develop exciting new technology, better seeds and find new ways to protect crops from weeds, pests, and diseases?

CORAF communications team went through some participating countries to meet with these new generation scientists and here is what we know about them.

The case of Mali

Overall, WAAPP Mali sponsored 120 students. 70 for Master degrees and 50 for Ph.Ds. Fields of study ranged from pisciculture, agricultural extension, agricultural hydraulics, agricultural economics, development communications, and monitoring and evaluation. anthropology, environment, food technology, soil science pastoralism (legislation), biotechnology, genetics of Rice, microbiology, parasitology, toxicology, natural resources management, etc.

Except for a few, most of the sponsored candidates have completed their studies and returned home in keeping to engagements signed with the government of Mali.

As we found out, except for a few who have resumed work in their previous positions, or picked up jobs in local national and international organizations, most of the graduates do not have jobs yet. The following video captures the thoughts and experiences of these students.

About WAAPP

The West Africa Agriculture Productivity Program (WAAPP) involves 13 countries. The 10-years program was designed to make agriculture more productive, sustainable and profitable for smallholder farmers in West Africa. Started in 2007, WAAPP also aims to improve the conditions of life of consumers through the provision of agricultural products at competitive prices, build a critical mass of researchers for sound, efficient and collaborative research programs and finally to ensure that technologies generated nationally are available regionally. The WAAPP was established at the initiative of the Economic Community of West African States (ECOWAS) as a response to the renewed commitment by African countries to implement the Comprehensive African Agricultural Development Program (CAADP). Participating countries fund the USD 500 million program through a loan system obtained from the World Bank. At the regional level, the program is coordinated by CORAF. More than two hundred technologies were released and adopted by almost 4,5 million producers and processors on about 4.8 million hectares. These technologies are available on www.mita.coraf.org. WAAPP financed master degree and Ph.D. studies for 1021 youths. This represents 72% of men and 28% women. These young researchers are expected to replace most the agriculture researchers going on retirement. The nine national centers of specializations of countries participating in the program benefitted from the renovation of their infrastructure and new research laboratories were constructed. Two of the centers have been upgraded in regional centers of specialization. This includes the Dry Cereals Center based in Senegal and The Roots and Tuber center based in Ghana. By increasing the primary crops yields between 30% for dry cereals and 150% for rice, fruit, and tubers, the program has had a considerable impact on food security and caloric intake. Caloric consumption rose from 2,777 kcals to 2,964 kcals and the "hunger period" reduced by 28 to 55% according to the commodity. WAAPP has also increased by 34% the economic situation of farmers as well as transformed communities.

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