



# TASAI

THE AFRICAN SEED ACCESS INDEX



## **Madagascar Brief 2017 - The African Seed Access Index**

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## INTRODUCTION

A competitive seed sector is key to ensuring timely availability of high quality seeds of improved, appropriate varieties at affordable prices for smallholder farmers in Madagascar. This country brief summarizes the key findings of The African Seed Access Index (TASAI) study conducted in 2016/17 to appraise the structure and economic performance of Madagascar's seed sector. With a focus on four grain crops important to food security in Madagascar — rice, maize, beans, and groundnut — the study evaluates the enabling environment for a vibrant formal seed sector. Cultivation of these four crops covers about 37% of the country's arable land, and these crops contribute to 60% of the population's daily calorie intake (FAOSTAT, 2017). The study covers 20 indicators divided into the following categories: Research and Development, Industry Competitiveness, Seed Policy and Regulations, Institutional Support, and Service to Smallholder Farmers. [Appendix 1](#) summarizes all 20 indicators and compares Madagascar with 12 other countries where similar studies were conducted. TASAI seeks to encourage public policymakers and development agencies to create and maintain enabling environments that will accelerate the development of competitive formal seed systems serving smallholder farmers.

## Overview

Like most other African countries, the seed industry in Madagascar consists of two systems: the informal sector

and the formal sector. This policy brief focuses almost exclusively on the formal seed sector.

The informal sector broadly refers to the system where farmers produce, obtain, maintain, and distribute seed resources from one growing season to the next (FAO, 1998). Due to limited exposure, low availability of most varieties, inability to purchase seeds, limited access to agro-dealers, or other reasons, most smallholder farmers in Madagascar still rely on the informal seed sector. Standards in the informal seed sector are not monitored or controlled by government policies and regulations; rather, they are guided by indigenous knowledge and standards, and by social structures. The colloquial nature of transactions means that there is scant performance data on the informal sector.

The formal sector focuses on breeding and evaluating improved varieties, and producing and selling certified seed. The seed is certified by the Official National Agency for Seed Control (ANCOS). Seed production is conducted by several categories of seed producers including seed companies, parastatals, seed producer groups, seed co-operatives, and individual seed producers. The utilization rate for certified seed in Madagascar is low. As shown in Table 1, Madagascar's formal seed sector comprises numerous institutions including government and private sector (mostly local seed producers and agro-dealers). The seed association, AMPROSEM is not very active in seed sector issues, and most of the seed producers are not members.

Table 1: Role of key players in Madagascar's formal seed sector

| ROLE                               | KEY PLAYERS                                                 |
|------------------------------------|-------------------------------------------------------------|
| Research and breeding              | FOFIFA, FIFAMANOR, CIRAD, Africa Rice, ECABREN, JICA        |
| Variety release and regulation     | CONASEM, ANCOS                                              |
| Seed production and processing     | Seed producers, seed companies, seed cooperatives, CMS, GPS |
| Education, training, and extension | Ministry of Agriculture, NGOs                               |
| Distribution and sales             | Seed producers, Agro-dealers                                |

**Key acronyms:** AMPROSEM – Malagasy Association for Seed and Plant Professionals; ANCOS – Official National Agency for the Control of Seeds and Seedlings; CIRAD – French Agricultural Research Centre for International Development; CMS – Center for Seed Multiplication; CNEV – National Catalog of Species and Varieties; COMESA – Common Market for Eastern and Southern Africa; CONASEM – National Council on Seeds; ECABREN – East and Central African Bean Research Network; FIFAMANOR – Fiompiana sy Fambolena Malagasy Norveziana; FOFIFA – Foibem-Pirenena momba ny Fikarohana ampin'ny Fam-pandrosoana ny eny Ambanivohitra; JICA – Japan International Cooperation Agency; REVSM – Register of Species and Varieties cultivated in the South of Madagascar; SADC – Southern African Development Community; SNSR – National Strategy for Rice Seed development.





### Number of active breeders

Madagascar currently has 29 active breeders for the four priority crops of rice, maize, beans, and groundnut. Most of the breeders (24 of 29) are based at public agricultural research institutions – *Fiompiana sy Fambolena Malagasy Norveziana* (FIFAMANOR) and *Foibe Fikarohana Ampiharina ho Fampandrosoana ny any Ambanivohitra* (FOFIFA). The remaining five breeders work in the private sector. Most of the breeders (21 of 29) focus on rice; two breeders work on maize, while beans and groundnut have three breeders each.

Many of the current breeders are close to retirement, and efforts to train new breeders are heavily focused on rice. Africa Rice is currently training 20 breeders, most of whom are attached to FOFIFA and concentrated in urban areas. Some rice breeders will be sent to China for training on breeding hybrid rice. Rice breeding efforts are also supported by the French Agricultural Research Centre for International Development (CIRAD), and the Japanese and Chinese governments.

On average, seed producers<sup>1</sup> satisfaction with the number of active breeders is good (70%). Despite the low number of maize, beans, and groundnut breeders, seed producers rate their satisfaction as good for each crop: 69% (rice), 66% (maize), 74% (beans), and 73% (groundnut).<sup>2</sup>

### Varieties released in the last three years

The National Catalog of Species and Varieties (CNEV) was last updated in 2008. Information from breeders and the National Council on Seeds (CONASEM) reveals that there were 13 variety releases for the four crops between 2014 and 2016, all of which were for rice. No new varieties of maize, beans, and groundnuts were released at the national level during this period. Figure 1 shows the three-year moving average of variety releases by CNEV since 2002. However, this does not present the complete picture of access to certified seed for farmers in Madagascar, for two reasons. Firstly, many varieties were produced and certified by CONASEM but not registered on CNEV. Secondly, many varieties are released and registered in the regional catalogue, called the Register of species and

varieties cultivated in the South of Madagascar (REVSM), but not on CNEV. Between 2014 and 2016, 61 varieties of rice were produced and certified, but not registered on CNEV. In addition, five rice varieties were released in REVSM, but not on CNEV. For maize, three varieties were produced and certified, but not released on CEV. For beans, eight varieties were produced and certified, and three varieties were released in REVSM, but not CNEV. There are no groundnut varieties in CNEV.

These disparities show a significant disconnect at two levels: i) between variety release and registration at the regional and national levels, and ii) between production and certification of seed, and the recommendation of certified seed for registration in CNEV.

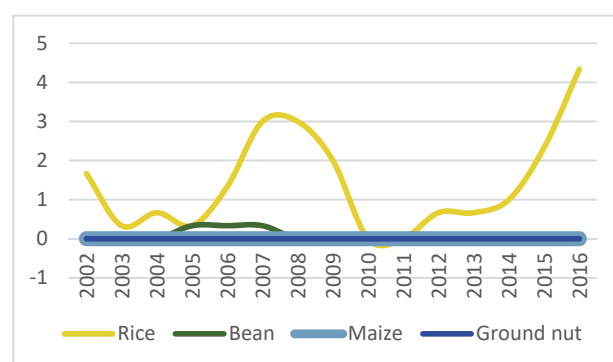


Figure 1: Number of varieties released in Madagascar (three-year moving average)

### Availability of foundation seed

On average, seed producers rate their satisfaction with the availability of foundation seed for all four crops as good (60%). The highest satisfaction rate was reported for beans (63%), while maize received the lowest rating (51%). Satisfaction ratings for the availability of foundation seed for rice and groundnut are 62% and 54%, respectively.

The three government parastatal institutions – FOFIFA, FIFAMANOR, and the Centre for Seed Multiplication (CMS) Sakay are the main sources of foundation seed. FOFIFA supplies foundation seed to about three-quarters of the rice seed producers. In addition, variety research and development is supported by Africa Rice (rice), CIRAD (rice, maize, groundnut), the Japan International Cooperation Agency (JICA; rice), and the East and Central African Bean Research Network (ECABREN; beans).

<sup>1</sup>This brief uses the terms “seed producers” to refer to all categories of enterprises that produce certified seed.

<sup>2</sup>All scores reported in this brief are based on industry self-reporting of satisfaction ranging from 0% for completely dissatisfied to 100% for completely satisfied.



### Average age of varieties sold

The average age of varieties on the market for all four crops is high. They range from 51 years for groundnut to 18 years for beans. The average age of the rice and maize varieties is 19 years and 24 years, respectively. There is also considerable variation in the ages of varieties. In the case of rice, for example, the oldest variety is 84 years old, while the youngest varieties are less than one year old. All the maize varieties sold to farmers (and registered on the CNEV) were released in the 1990s, while three of the four groundnut varieties were released in the 1950s.

### Varieties with climate-smart features

To be classified as climate-smart, a crop variety must meet at least one of two criteria – early maturity and/or tolerance to extreme weather conditions, such as drought, flooding, or frost. Of the 7 rice varieties released between 2013 and 2015, two had climate-smart characteristics. These two varieties, maintained by FOFIFA, are early maturing. There were no releases on CNEV for maize, beans, or groundnut during this period.

To provide a more comprehensive picture of climate-smart varieties, it is also important to consider whether varieties that have been produced and certified or recommended by CONASEM for release at the national level have climate-smart features. In that respect, 8 of 27 new rice varieties are climate-smart, with the most common feature being drought tolerance. Most of the maize varieties (4 of 5), and all the four beans and four groundnut varieties on CNEV are climate-smart. The most common climate-smart feature for these three crops is early maturity.

## INDUSTRY COMPETITIVENESS

### Number of active seed companies

At the end of 2016, Madagascar had 157 seed producers. However, the ANCOS register lists only 39 seed enterprises producing 13 crops. Most of the un-registered seed producers are individual seed growers and seed producer groups who have neither a fiscal identification number (FIN), nor a statistical identification number (INSTAT).

Forty-eight seed producers are currently engaged in the production and/or marketing of seed for at least one of the four focus crops under the control/inspection of ANCOS. Though controlled by ANCOS, they are not all on the

ANCOS register. Of these, 4 are parastatals, 13 are seed companies, 15 are seed producer groups (GPS), and 16 are either associations, co-operative unions or individual seed producers.

Of the 48 producers, 41 produce rice, 11 produce maize, 20 produce beans, and 11 produce groundnut. Aggregate sales for the four crops in 2016 were 1,233 tons (rice), 172 tons (maize), 193 tons (beans), and 22 tons (groundnut). The volume of seed sales and number of seed producers clearly show that rice is the most important food crop in Madagascar.

### Market share of top seed companies

Market share is calculated using seed sales, as reported by seed producers. By crop, the market shares for the top four producers are: 44% for rice, 94% for maize, 65% for beans, and 95% for groundnut (fig. 2). The market shares suggest healthy competition, especially for rice and beans, which have the highest number of seed producers. While this may appear to be a positive attribute with regards to market competitiveness, it is important to note that the volume of sales by each producer is quite low.

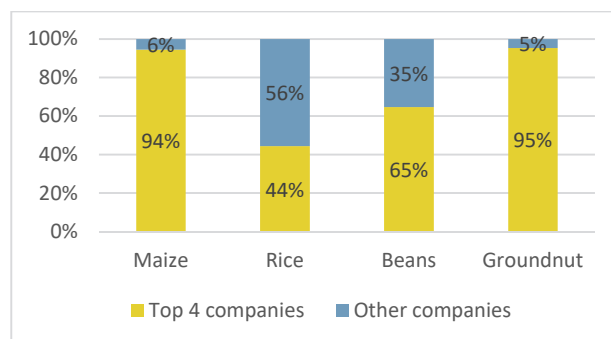


Figure 2: Total market share (%) of top four companies

The Herfindahl-Hirschman Index (HHI) was also used to quantify industry competitiveness. The index, a sum of squared market shares, ranges from near zero for perfect competition, to 10,000 for a pure monopoly. HHI was calculated for all the seed producers, for each crop. The market concentration for rice is excellent (783), while the market concentration is fair for maize (2,272), beans (2,583), and groundnut (2,816). The market shares of the top four producers and the HHI results both indicate a very competitive seed market for rice, and fairly competitive seed markets for maize, beans, and groundnut.



### Market share of government parastatal

Across the four focus crops, four parastatals are involved in the production of certified seed in Madagascar. Importantly, the parastatals only produce rice and beans: their combined market share for these two crops is 5.6% and 10.4%, respectively. It is important to note that three former CMSs were privatized and produce rice. CMS Sakay, the only remaining CMS yet to be privatized, produces maize and rice seed, though it did not record any production in 2016. None of the parastatals produce groundnut seed.

### Length of import/export process for seed

Only one company imports seed for any of the four crops, and this company imports hybrid maize seed. In addition, the Malagasy government occasionally imports hybrid rice from China. The length of the import process is calculated as the number of days from the time an import permit is applied for, to the time the seed is cleared at the border. The single company that imported seed in 2016 reported that it takes, on average, 24 days to import seed into Madagascar, and rated the process as good (73%).

## SEED POLICY AND REGULATIONS

### Length of variety release process

The length of the variety release process refers to the time from the application for release of a variety to the time the variety is released by the relevant authority. In Madagascar, crop variety release is the mandate of CONASEM.

Between 2014 and 2016, CONASEM only released rice varieties; no maize, beans, or groundnut varieties were released during this period. Seed producers reported that the average length of the variety release process for rice was 43 months. On average, seed producers rate their satisfaction with the length of the release process for rice as fair (54%).

### Status of seed policy framework

The seed industry in Madagascar is guided by several policy instruments. The Seed Law (No. 94-038) was passed in 1995. The instrument to enforce this law, called the Enforcement Decree on Institutions, was passed in 2006. The National Seed Strategy Document was passed in 2008. Regulations on seed production, control, certification and marketing were drafted in 2010, the same year

that the decree regulating the inclusion of varieties in the National Catalog of Species and Varieties was passed. ANCOS was established in 2013. More recently, in 2016, the National Strategy for the Development of the Rice Seed Sector (SNSR) in Madagascar was passed.

Madagascar is a signatory to the Common Market for Eastern and Southern Africa (COMESA) and Southern African Development Community (SADC) seed harmonization protocols and its seed regulations are currently being revised to conform with both regional protocols. The revisions will address issues such as seed certification, inspection, variety release, and seed movement in the region.

### Quality of seed regulations and enforcement

Seed producers are generally satisfied with the quality of the seed policy and law, rating them as good (65%). However, most of the seed producers expressed dissatisfaction with the level of enforcement of the laws by government, rating their efforts as fair (47%).

There are two main areas of dissatisfaction. The first is at the stage of registration of seed enterprises, where the criteria and process for registering seed producers are rarely followed. As a result, many active seed producers are not formally registered by ANCOS and do not have adequate capacity to produce certified seed, resulting in low quality seed on the market. The second area is in seed marketing. Unqualified seed producers and other seed agents often secure government contracts to supply certified seed. These supply contracts often flout the formal procurement process leading to low quality seed on the market. These two issues are compounded by the shortage of financial and human resources at ANCOS. As a result, competent and experienced seed producers face market losses, which reduces their confidence in the nation's seed sector environment.

### Adequacy of seed inspectors

ANCOS has a total of 60 seed inspectors distributed across the 22 regions of Madagascar. Seed inspectors are recruited from both the ANCOS headquarters and the Regional Directorates of Agriculture and Livestock. In March 2017, the Ministry of Agriculture and Livestock (MPAE) – with support from JICA – trained 20 new seed inspectors and controllers. The inspectors are in charge of verifying crop declarations, field inspections, and seed sampling at harvest time, among other functions.



On average, seed producers rate their satisfaction with the adequacy of seed inspection services as good (63%). Despite the high rating, seed producers reported several impediments to quality inspection services, including the small number of seed inspectors, which results in delayed inspections and disruptions to cropping programs. Field inspections results are also regularly delayed, especially during the peak season of July-September, when many rice seed samples are sent to the seed laboratory at the same time. Tests are subsequently delayed due to a shortage of laboratory equipment and personnel.

### Efforts to stamp out fake seed

Seed producers indicated that a total of 34 cases of fake seed sales were reported to them in 2016. This figure is likely to be an underestimate, as most cases of fake seed are not officially reported. On average, seed companies are not satisfied with the government's efforts to stamp out fake seed, rating them as poor (37%). According to the seed companies, the main sources of fake seed are seed producers and traders who sell seed that has not been inspected by ANCOS. The challenge is exacerbated by the weak enforcement of seed law and regulations. Although the laws stipulate the penalties for the production and marketing of fake seed, ANCOS does not have the capacity to effectively police seed sales.

### Use of smart subsidies

In 2016, the Malagasy government purchased and distributed 1,962 tons of emergency relief seed to farmers. Most of the seed distributed was rice. After purchase, the Ministry deposits the seed at the different Regional Directorates and then distributes the seed to vulnerable farmers at no cost. The subsidy program has been in existence for seven years. However, it is not considered smart, due to the significant involvement of the government in seed distribution and weak controls during the seed procurement process.

## INSTITUTIONAL SUPPORT

### Availability of extension services

Madagascar has approximately 92 agricultural extension workers. Of these, seven are employed by the government (under FIFAMANOR), while the remainder work for seed companies and NGOs. No extension workers are employed directly under MPAE, following a restructuring of MPAE that eliminated its department of agricultural

extension. As a result, the ratio of extension officers to agricultural households is approximately 1:26,000. This ratio is significantly lower than other African counties, such as Ethiopia (1:592) or Kenya (1:910). Seed producers rate their satisfaction with the extension services as fair (40%).

Despite the perceived inaction by government, MPAE is working with development partners and NGOs to train and deploy agricultural advisors to serve as extension officers. However, this effort is constrained by a lack of financial resources to facilitate the transportation of these advisors across the country.

### Quality of national seed trade association

AMPROSEM, which, along with MPAE, is the current chair of the National Seed Committee (CONASEM), was formed in 1999. It has about 20 active members, and most of the seed producers surveyed by TASAI were not members of the organization; in fact, they had never heard of AMPROSEM. Member seed producers surveyed rated their satisfaction with the overall quality of AMPROSEM as fair (45%). Figure 3 illustrates members' level of satisfaction with AMPROSEM's performance in six service areas. Producers rated AMPROSEM as fair in three categories – democracy in elections and decision-making (40%), managerial ability (44%), and effectiveness in advocacy (41%). Seed producers rated AMPROSEM as poor in all the other service areas – ability to mobilize resources (39%), providing value to members (39%), and activity on important seed sector issues (38%). According to the seed companies, AMPROSEM needs to increase its visibility in the country's seed industry to be seen as a useful platform to address seed producers' concerns.

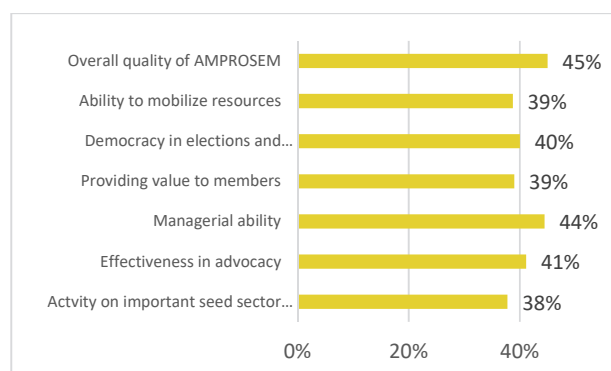


Figure 3: Members' satisfaction with AMPROSEM (Source: TASAI Survey)



### Concentration of rural agro-dealer network

There are about 140 agro-dealers in Madagascar, of which 21 are wholesalers and 119 are retailers or stockists. These numbers may be an underestimate due to the lack of national data. Of the 140 agro-dealers, only 37 are registered with ANCOS. The number of agro-dealers translates to a ratio of one agro-dealer for every 17,300 agricultural households.

Most agro-dealer outlets are located near tarmac roads or trading centers, with few agro-dealers in rural areas. Some farmers must walk long distances to access their preferred seed varieties. Seed producers rated their satisfaction with the agro-dealer network as good (64%)..

### Availability of seed in small packages

Approximately 32% of the seed for all four crops is sold in packages of 2 kg or less. The amount of seed sold in small packages varies from 27% for maize, to 35% for rice. The amount for beans and groundnuts is 28%. There is no notable difference between the package sizes for the four crops, which is confirmed by industry opinion. On average, seed producers rate their satisfaction with the volumes of seed sold in small packages as fair (between 47% and 53%) for all four crops.

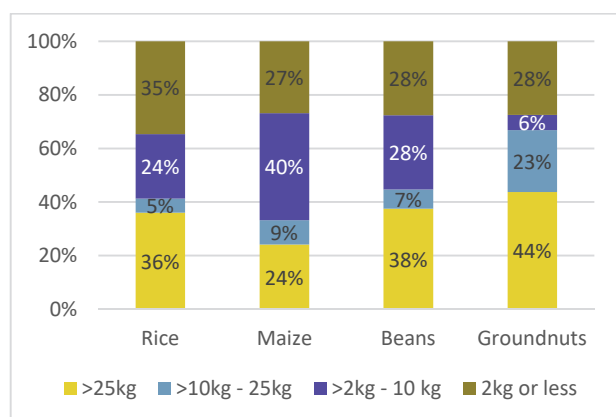


Figure 4. Percentage of seed sold in different package sizes

### Seed-to-grain price ratio

Assuming stable prices at planting time, seed-to-grain price ratios can reflect the attractiveness of a variety or affordability of improved seed relative to farmer recycled grain. Seed-to-grain price ratios for the four crops do not vary significantly: maize OPV (2.4:1), rice (2.3:1), beans (2.2:1) and groundnut (1.5:1). These ratios are noticeably lower to those in other countries like Tanzania (5.1:1 for

maize OPV), Malawi (4.1:1 for maize OPV) and Ethiopia (3.6:1 for maize OPV). This signifies that maize seed is relatively cheaper in Madagascar than other countries in the region.

### CONCLUSION

The seed industry in Madagascar is in the growth stage. The low adoption rates of certified seed for key food crops suggests that there is space for growth. The seed industry is dominated by rice, the country's staple crop, in terms of volume of rice seed sold, number of active seed companies producing seed, number of breeders working on rice, and the number of varieties released. This presents an opportunity for seed companies in the region to produce and market other seeds, like maize, whose hybrids are popular across the East and Southern Africa. Through the COMESA and SADC seed regulations, companies can also import certified seed into Madagascar.

Despite the potential opportunity for increasing sales in the country, the industry also faces challenges. Variety development is dominated by rice as evidenced by the number of public breeders and variety releases. This research work is supported by institutions including Africa Rice and CI-RAD, whose support is likely to continue. However, increasing private investment in breeding other crops is also important. The privatization of CMS Sakay is a step in the right direction in this regard.

Madagascar's seed policy instruments are mostly up-to-date. The rice seed strategy supports these instruments by providing direction and outlining actions to improve the most important agriculture sub-sector in the country. In addition, the content of these instruments is appreciated by seed producers. However, the main challenge is in the enforcement of the seed laws and regulations.

One of the main policy-related challenges relates to variety release. First, the process takes very long, up to 10 years for some rice varieties. This is a major complaint by the seed producers, and disincentive to breeders. Second, the inconsistency between the national (CNEV) and regional (REVSM) variety catalogues. Most of the varieties on REVSM are not reflected in the national catalogue. To compound this, most of the varieties that have been released by CONASEM are not registered on CNEV. This inconsistency needs to be addressed to provide assurance to breeders who invest in research and variety development.



A second policy challenge pertains to the weaknesses in quality control, especially at the stage of seed production. Many seed producers in Madagascar are neither registered with, nor inspected by ANCOS. This leads to the supply of low quality seed on the market. On the positive side, the current efforts to improve the seed inspection services by hiring and training more inspectors will partly address challenges related to seed quality control, including fake seed.

Most of the support services in Madagascar are weak. AMPROSEM, which is supposed to serve as a platform for seed producers, lacks the financial and technical capacity to perform its mandate. And as result, it is not well-known in the sector.

## REFERENCES

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## APPENDIX 1.

For a comparison of TASAI Indicators across 13 countries, please visit: <http://tasai.org/wp-content/uploads/TASAI-Appendix-CURRENT.pdf>







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