Niger Country Report 2022

The African Seed Access Index

By
Edward Mabaya, Issoufou Salami, Liman Souley Abdulkarim, Michael Waithaka, Mainza Mugoya, Brian Damba and Krisztina Tihanyi

TASAI
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Edward Mabaya

Issoufou Salami

Liman Souley Abdoulkarim

Michael Waithaka

Mainza Mugoya

Brian Damba

Krisztina Tihanyi

Reviewed by

Issoufou Kapran

Coulibaly Mamadou

Laouali Mahamane Nasser

Oumarou Souleymane

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LIST OF ACRONYMS

APPSN	Association des Producteurs Privés des Semences du Niger / National Association of Private Seed Producers in Niger
CGIAR	Consultative Group on International Agricultural Research
CNS	Comité National de Semences / National Seed Committee
CTHV	Comité Technique d'Homologation Variétale / National Variety Release Committee
DCCS	Direction du Contrôle et de la Certification des Semences / Directorate of Seed Quality Control and Certification
DGA	Direction Générale de l'Agriculture / General Directorate of Agriculture
DGPV	Direction Générale de la Protection des Végétaux / General Directorate for Plant Protection
DPCVA	Direction de la Promotion des Chaines des Valeurs Agricoles / National Directorate for Agricultural Value Chain Promotion
DRA	Directeurs Régionaux de l'Agriculture / Regional Directors of Agriculture
DRREA	Directions Régionales de Recherches Environnementales et Agricoles / Regional Directorates of Environmental and Agricultural Research
DUS	Distinctness, Uniformity and Stability
ECOWAS	Economic Community of West African States
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IITA	International Institute for Tropical Agriculture
INRAN	Institut National de la Recherche Agronomique du Niger (INRAN) / National Agricultural Research Institute of Niger
ISTA	International Seed Testing Association
ITPGRFA	International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)
MAG	Ministère de l'Agriculture / Ministry of Agriculture
OECD	Organization for Economic Co-operation and Development
ONAHA	Office National des Aménagements Hydro-Agricoles / National Office for Irrigation Schemes
VCU	Value for Cultivation and Use

INTRODUCTION

The increased use of productivity-enhancing technologies, including mechanization, irrigation, fertilizer, and improved seed[1], are critical to improving food and nutritional security across Africa. For field crops, a competitive formal seed sector is key to ensuring the timely availability of high-quality seed of improved, appropriate varieties at affordable prices for smallholder farmers. Improved seed can deliver state-of-the-art technology to farmers including higher yields, disease and pest resistance, climate change adaptation, reduced post-harvest losses, and improved nutrition. To facilitate the delivery of these benefits to farmers, The African Seed Access Index (TASAI) conducts seed industry assessments at the national level and uses the findings 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 in Africa.

This report summarizes the key findings of the inaugural TASAI study to appraise the structure and economic performance of Niger's formal seed sector. Conducted in 2022, the study focuses on four grain and legume crops – millet, cowpea, sorghum, and maize – which are important to Niger's food and nutritional security (the "four focus crops"). Millet, cowpea, and sorghum are the most widely grown crops in Niger, accounting, respectively, for 36%, 34%, and 21% of the total area planted with rainfed crops, estimated at 17.14 million hectares in 2021 (MAG 2022a). Further, these three crops accounted for 99% of the area of cereals and pulses harvested in 2021.[2] Due to unsuitable climatic conditions, maize currently covers less than 1% of the total cultivated area in Niger; nevertheless, it was added as the fourth focus crop of the study because maize is commonly consumed by Nigerien households (Laouali, 2014). In addition, in 2023 more varieties were released for maize than for the other three crops, signaling the crop's growing importance. Importantly, many of the new releases were early or extra-early maturing, allowing Nigerien farmers to grow more maize and meet the increasing demand.

OVERVIEW OF NIGER'S SEED INDUSTRY

Like most other African countries, Niger's seed industry consists of the informal and formal seed systems. **In the informal system** seed is produced, maintained, and distributed through informal networks. These activities "tend to be decentralized and might revolve around local entrepreneurship, seed banking, community-based seed production, or seed villages" (McGuire & Sperling 2016). In many cases, farmers keep seed from the harvest and exchange it with neighbors, relatives, and through rural markets. Seed from this system is of variable varietal purity, physical and sanitary quality.[3]

The formal system is a structured and regulated value chain for the production and sale of improved and certified seed varieties. The process involves many actors and institutions, whose activities range from breeding varieties to the multiplication, processing, and distribution of certified seed. The different stages of improved seed production are overseen by governments according to approved regulations and standards. Seed from this system is sold through limited distribution channels, such as registered seed producers/companies and agro-dealers.

It is estimated that only around 8-10% of the area devoted to major crop production is planted with seed obtained through the formal seed system (MAG 2012b; SSG 2020). This clearly indicates that, at present, most Nigerien farmers, most of the time, rely on the informal sector, making it an important part of seed systems in Niger. While TASAI recognizes the presence and role of pluralistic seed systems, TASAI country studies focus primarily on the formal seed system due to the inherent difficulties of measuring – or finding existing data on – the informal sector.

1 TASAI uses "improved seed" as the short form of "quality seed of improved varieties".

2 Source: https://www.fao.org/faostat/en/#data/QCL

3 See seed system definitions at https://www.agrilinks.org/post/seed-system-definitions

In Niger's formal seed system, the *La Politique Semencière Nationale* (National Seed Policy) (MAG 2012a) defines the roles and responsibilities of each key actor in the seed sector. Breeder and foundation (basic) seeds of major crops are produced primarily by the *Institut National de la Recherche Agronomique du Niger* (INRAN) and the Sahelian Center of the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) (Table 1). Certified seed is produced by private seed companies, farmers' organizations, and individual seed producers, who mostly operate under contract with seed companies. Breeder, basic, and certified seeds are all produced under the supervision of the *Direction du Contrôle et de la Certification des Semences* (DCCS), the official public seed control service (Salami et al. 2019). Other government entities include the *Comité National de Semences* (CNS), an advisory body whose role is to implement Niger's national seed policy and regulations. In addition, the *Commission Technique d'Homologation Variétale* (CTHV), which operates under the CNS, oversees the technical evaluation of the candidate varieties proposed for release. The *Direction de la Promotion des Chaines des Valeurs Agricoles* (DPCVA) and the *Office National des Aménagements Hydro-Agricoles* (ONAHA), together with non-governmental institutions, provide extension services.

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

ROLE	KEY PLAYERS
Research and breeding	*Institut National de la Recherche Agronomique du Niger* (INRAN), International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)
Variety release and regulation	*Comité National de Semences (CNS), Comité Technique d'Homologation Variétale (CTHV), Direction du Contrôle et de la Certification des Semences (DCCS).*
Seed production and processing	Registered seed producers comprising individual seed producers, farmers' organizations and seed companies, *Association des Producteurs Privés des Semences du Niger (APPSN)*, Non-Governmental Organizations (NGOs) and projects
Education, training, and extension	INRAN, ICRISAT, public universities, mid-level public and private training schools, Ministère de l'Agriculture (MAG), APPSN, Direction de la Promotion des Chaines des Valeurs Agricoles (DPCVA), L'Office National des Aménagements Hydro-Agricoles (ONAHA), NGOs, projects and farmers' organizations
Distribution and sales	Seed producers, agro-dealers, government, NGOs and projects

METHODS

TASAI studies cover 22 indicators divided into five categories: **Research and Development, Industry Competitiveness, Seed Policy and Regulations, Institutional Support,** and **Service to Smallholder Farmers) (**Table 2). In most cases, the bulk of the performance data comes from the year prior to the year when the study is conducted ("the study year") because that is the year for which the most recent data are available. Accordingly, the data reported in this Country Report pertain primarily to 2021; when more recent data were available, they are included in the report. Further, since TASAI has conducted similar studies in 21 other African countries, this report also draws relevant cross-country comparisons. More detailed comparisons are now available through an online dashboard at https://dashboard.tasai.org

Table 2: TASAI Indicators

		Crop-specific	Impact on seed access[a]
A	**RESEARCH AND DEVELOPMENT**		
A1	Adequacy of active breeders	**Yes**	+
A2	Number of varieties released	**Yes**	+
A3	Number of varieties with 'special' attributes/ features	**Yes**	+
A4	Availability of basic seed	**Yes**	+
B	**INDUSTRY COMPETITIVENESS**		
B1	Number of active seed companies/producers	**Yes**	+
B2	Quantity of seed produced and sold	**Yes**	+
B3	Number of varieties sold and dropped	**Yes**	+
B4	Average age of varieties sold	**Yes**	-
B5	Market concentration	**Yes**	-
B6	Market share of state-owned seed company	**Yes**	-
B7	Efficiency of seed import/export processes	**Yes**	+
C	**SEED POLICY AND REGULATIONS**		
C1	Length and cost of variety release process	**Yes**	-
C2	Status and implementation of national seed policy framework	**No**	+/-
C3	Harmonization with regional regulations	**No**	+
C4	Adequacy of efforts to eradicate counterfeit seed	**No**	+
C5	Use of government subsidies	**No**	+/-
D	**INSTITUTIONAL SUPPORT**		
D1	Performance of national seed association	**No**	+
D2	Adequacy of seed inspection services	**No**	+
E	**SERVICE TO SMALLHOLDER FARMERS**		
E1	Availability of agricultural extension services for smallholder farmers	**No**	+
E2	Concentration of agro-dealer network	**No**	+
E3	Availability of seed in small packages	**Yes**	+
E4	Seed and grain price at planting time	**Yes**	-/+

a A plus/negative sign signals a positive/negative correlation between the indicator and smallholder farmers' access to improved seed.

Using TASAI survey tools, data collection focused on three key seed industry players: seed companies and producers[4], plant breeders, and representatives of government entities active in the country's seed sector. Of these, seed producers were the study's primary source of information. For several indicators, quantitative data is supplemented with self-reported industry satisfaction ratings on a 0-100 scale, with the following brackets: 0-19.99% **extremely poor,** 20-39.99% **poor,** 40-59.99% **fair,** 60-79.99% **good,** and 80-100% **excellent.**

According to the *Direction du Contrôle et de la Certification des Semences* (DCCS), in 2021, 537 seed producers reported to have produced certified seed of one or more of the four focus crops (MAG 2022a). Given that the volumes produced may be very small, the TASAI survey targeted those who produced at least 10 metric tons (MT) of seed of one or more of the four focus crops in 2021. The number of producers that met this criterion was 71. Of the 71, 40 responded to the survey: 18 seed companies (accounting for all active seed companies[5]), 2 research institutes (INRAN and ICRISAT), and 20 other seed producers, comprising individual and farmers' organizations. The 40 respondents accounted for 40% of the total seed produced (7,676 MT) in 2021, as reported by government. The remaining 31 eligible respondents were unwilling to participate in the survey, despite multiple attempts to contact them. Their lack of interest could be due to a lack of awareness of TASAI's work and its potential benefit for the seed sector in Niger. Subsequent studies will hopefully result in higher rates of participation. Table 3 provides a breakdown of the registered and surveyed seed producers and seed companies by crop.

Besides producers, the study included interviews with officials from the *Ministère de l'Agriculture,* including the *Directeur Général de l'Agriculture* (DGA), who oversees all agriculture-related issues, the *Directeur de la Direction du Contrôle et de la Certification des Semences* (DCCS), the *Directeur de la Promotion des Chaines de Valeur Agricoles* (DPCVA), and the *Directeurs Régionaux de l'Agriculture* (DRA) for six regions - Diffa, Dosso, Maradi, Tahoua, Tillabéri, and Zinder.

The data collection also included interviews with eight plant breeders: two pearl millet breeders, two sorghum breeders, two cowpea breeders, and one maize breeder from INRAN, and an additional pearl millet breeder from ICRISAT. The *Association des Producteurs Privés des Semences du Niger* (APPSN), the country's seed trade association, was also surveyed.

4 In Niger, seed producers include individual seed producers, individual cooperatives, unions, and federation of cooperatives.

5 TASAI defines an "active seed company" as a company that produces and/or markets seed of one or more of the four focus crops.

Table 3: Breakdown of respondents by crop (2021)

Crop	Number of registered seed producers (government data)	Number of producers that fit sampling criteria	Number of seed producers surveyed (TASAI data)	Number of seed companies surveyed (TASAI data)
Maize	17	15	4	11
Millet	153	68	22	17
Sorghum	62	36	11	16
Cowpea	191	37	8	12
Total*	**191**	**71**	**22**	**18**

* The total number differs from those by crops because some seed entities produce more than one crop.

RESEARCH AND DEVELOPMENT

NUMBER OF ACTIVE BREEDERS

A functioning seed system needs vibrant public and private breeding programs to develop improved varieties that respond to farmer and consumer needs. The number of active public breeders is indicative of the level of investment in research and development.[6] In addition to tracking the number of breeders working on the four focus crops, the study also measured the level of satisfaction reported by seed companies/producers with the public breeding programs. The latter reflects the ability of active breeders in public institutions[7] to produce new varieties.

Plant breeding activities in Niger are mainly carried out by INRAN, a semi-autonomous public institute, and ICRISAT's Sahelian Centre. INRAN's crop breeding programs occasionally collaborate with centers of the Consultative Group on International Agricultural Research (CGIAR) or through internationally funded projects (SSG 2020). The national breeding programs focus on the rainfed crops of millet, sorghum, cowpea, groundnut, and maize, and, to a lesser extent, irrigated rice.

In 2022, Niger had nine active plant breeders for the four focus crops, eight men and one woman (Table 4). Broken down by crop, the nine included three sorghum breeders, two cowpea breeders, three millet breeders and one maize breeder. Save for one millet breeder who worked for ICRISAT, all breeders were employed by INRAN. All INRAN breeders held Ph.Ds., and most were trained at the West African Centre for Crop Improvement (WACCI) at the University of Ghana, with support from AGRA's Program for Africa's Seed Systems (PASS). The country had no private breeders in 2021. According to the breeders, the main challenge they face is a lack of funding and infrastructure for breeding work, including nurseries with irrigation facilities, greenhouses, and other equipment.

Despite the lack of funding and infrastructure, seed producers' satisfaction with the adequacy of the breeding programs was "good" for maize and millet, and "excellent" for cowpea and sorghum. This suggests that, while breeders report less-than-ideal conditions for their work, seed producers feel that they have good access to improved varieties, whether from the local breeding programs at INRAN and ICRISAT or from other CGIAR centers and National Agricultural Research Institutes (NARIs) in neighboring countries that collaborate with local institutions.

6 TASAI studies define an "active breeder" as a breeder who is currently engaged in breeding/maintaining a variety or a breeder who had either developed and released at least one variety or was developing a variety of the crop of interest at the time of the TASAI study.

7 The intention of this indicator is to assess the vibrancy of public breeding programs. TASAI does not assess the adequacy of breeders from the CGIAR centers since their mandate covers multiple countries and regions.

Table 4: Number and adequacy of active breeders in Niger (2021)

Crop	Number of public breeders	Number of private breeders	Total number of breeders	Satisfaction rating (out of 100%)
Maize	1	0	1	77%
Millet	3	0	3	78%
Sorghum	3	0	3	80%
Cowpea	2	0	2	83%
Total	**9**	**0**	**9**	

extremely poor | poor | fair | good | excellent

NUMBER OF VARIETIES RELEASED IN THE LAST THREE YEARS

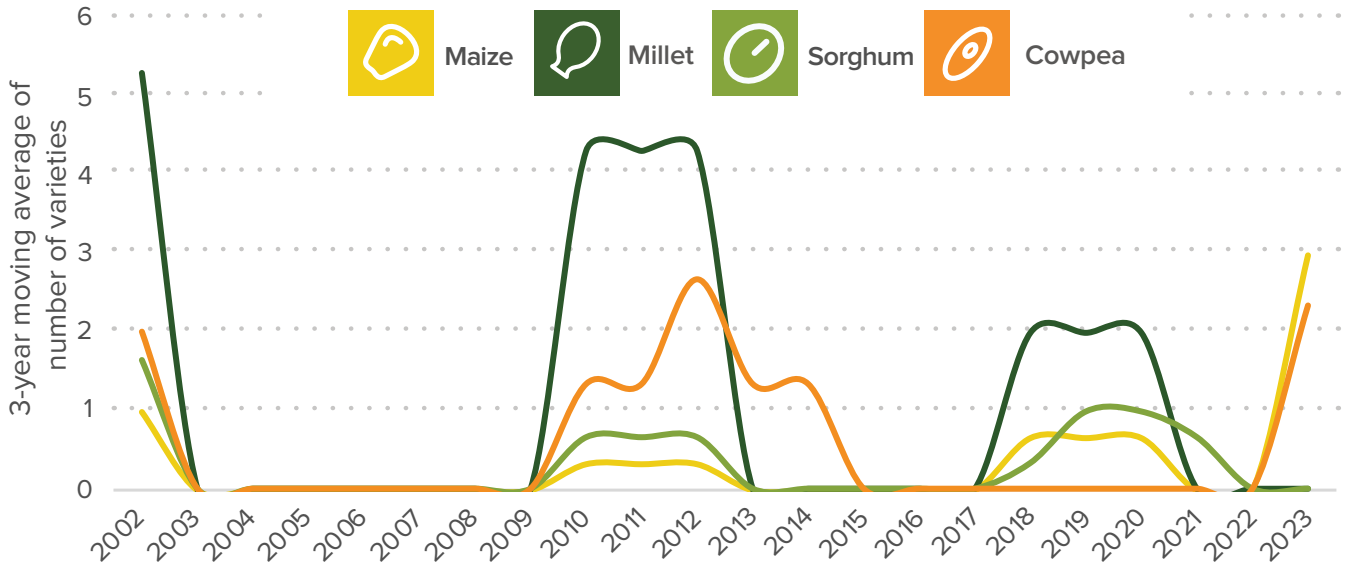
The number of varieties released is a good measure of the functioning of the variety development and release system. The greater the number of varieties released in a country, the higher the chances of enhancing smallholders' access to improved seed. In addition to higher yields, new varieties often carry desired traits such as climate smartness, disease/pest resistance, and nutrition enhancements. For these varieties to become more accessible to farmers, however, the release of varieties also needs to be supported by the commercialization and bulking of early generation seed.

Between 2021-2023, 16 new varieties for two of the focus crops – 9 maize and 7 cowpea varieties, were released. This is a positive development as a result of renewed support for breeding programs. However, despite the recent releases, the number of varieties released in Niger is low. In addition, the frequency of the releases is irregular, as illustrated in Figure 1, which shows the trend in varieties released between 2000 and 2023 using a three-year moving average.[8] The data shows three spikes in variety releases in 2001, 2010, and 2018. The high number in 2001 represents the point when all crop varieties released by INRAN and ICRISAT before 2000 were added to the catalogue. Between 2000 and 2008, no varieties were released due to the collapse of INRAN's breeding programs and research activities following the closure of the World-Bank-funded National Agricultural Research Project (PNRA) in 1998 (Stads et al., 2010). This left INRAN in a severe financial crisis and many highly qualified breeders and scientists left the institute. Most varieties registered in 2010 were developed by INRAN or introduced from CGIAR centers and NARIs in neighboring countries. The third spike was in 2018, when the registration process for crop varieties resumed after the breeding programs at INRAN were revived by a new generation of breeders trained at the AGRA-supported WACCI. The new releases during this period include millet, sorghum, and maize varieties; no cowpea variety was released. Out of the 9 maize varieties released between 2021 and 2023, four varieties were developed at INRAN. The remaining five maize were developed by IITA outside Niger and introduced into country.

Since INRAN's establishment in 1975, its breeding programs have developed 110 improved varieties for pearl millet, sorghum, cowpea, and groundnut. INRAN has also introduced and disseminated improved varieties developed by the CGIAR centers (namely, the International Institute for Tropical Agriculture (IITA) and ICRISAT), AfricaRice, and NARIs from West African countries. The 110 varieties were captured in the first edition of the National Catalog of Varieties and Vegetal Species (*Catalogue National des Espèces et Variétés Végétales*) released in 2012 (MAG 2012b). It includes 33 pearl millet, 16 cowpea, 7 sorghum, and 4 maize varieties, among other crops. Apart from a single sorghum line (SSD-35) released by INRAN in 2010, all the focus crop varieties in the 2012 catalog were developed and released before 2000. Since the last update of the catalogue in 2021, 2 maize varieties, 2 millet varieties, and 3 sorghum varieties were added to it (CNS-Niger 2021).

8 A 3-year moving average refers to the average change in the number of varieties released every three years. It is commonly used to smooth out short-term fluctuations in time-series data.

Figure 1: Trend in the number of varieties released (3-year moving average)



NUMBER OF VARIETIES WITH SPECIAL FEATURES

Varieties may have special characteristics, for instance, climate-smart, use-related (e.g., fast-cooking or nutrition-enhanced), or industry-demanded features (e.g., suitability for making starch, suitability for livestock feed, high-oil content, etc.). While acknowledging the increase in biotic stresses (pests, weeds, and diseases) due to climate change, TASAI studies narrowly define "climate-smart features" as those that respond to extreme weather events, such as droughts, floods and frost, that affect current farming practices. Examples of climate-smart features are drought tolerance, early maturity, and extra-early maturity.

Table 5 shows that, of the nine maize varieties released in 2023, three have special features: two are both biofortified (high ProVitamin A levels) and are extra-early maturing, while one has high sugar content[9]. All seven cowpea varieties released in 2023 have special features: they are resistant to heat stress. They can also be used as grain and fodder. Two of the cowpea varieties are also extra-early maturing.

Table 5: Number of varieties released that have special features

Feature	Description of feature	Number of varieties released 2021-2023				
		Maize	Millet	Sorghum	Cowpea	TOTAL
All varieties released		9	0	0	7	**16**
All varieties released with special features		3	0	0	7	**10**
Climate smart features	All	2	0	0	7	**9**
	Moderately tolerant to drought	0	0	0	N/A	**0**
	Heat-stress resistant	0	0	0	7	**7**
	Early / extra-early maturing	2	0	0	2	**4**
Fast-cooking and nutrition-enhanced features	All	2	0	0	0	**2**
	Fast cooking	N/A	0	0	N/A	**0**
	Nutrition-enhanced features	2	0	0	N/A	**2**
Industry-demanded features	All	1	0	0	N/A	**1**
	High sugar content	1	0	0	N/A	**1**

AVERAGE AGE OF VARIETIES SOLD

In vibrant seed systems, farmers regularly replace old varieties with new ones. In many African countries, old varieties persist, even though newer varieties with traits that respond to demands by farmers, consumers, and industry, may outperform older ones. A lower average age of varieties signals higher rates of variety turnover. TASAI tracks the average age of a variety by crop.

9 Industry uses sweet corn to produce starch and edible oil.

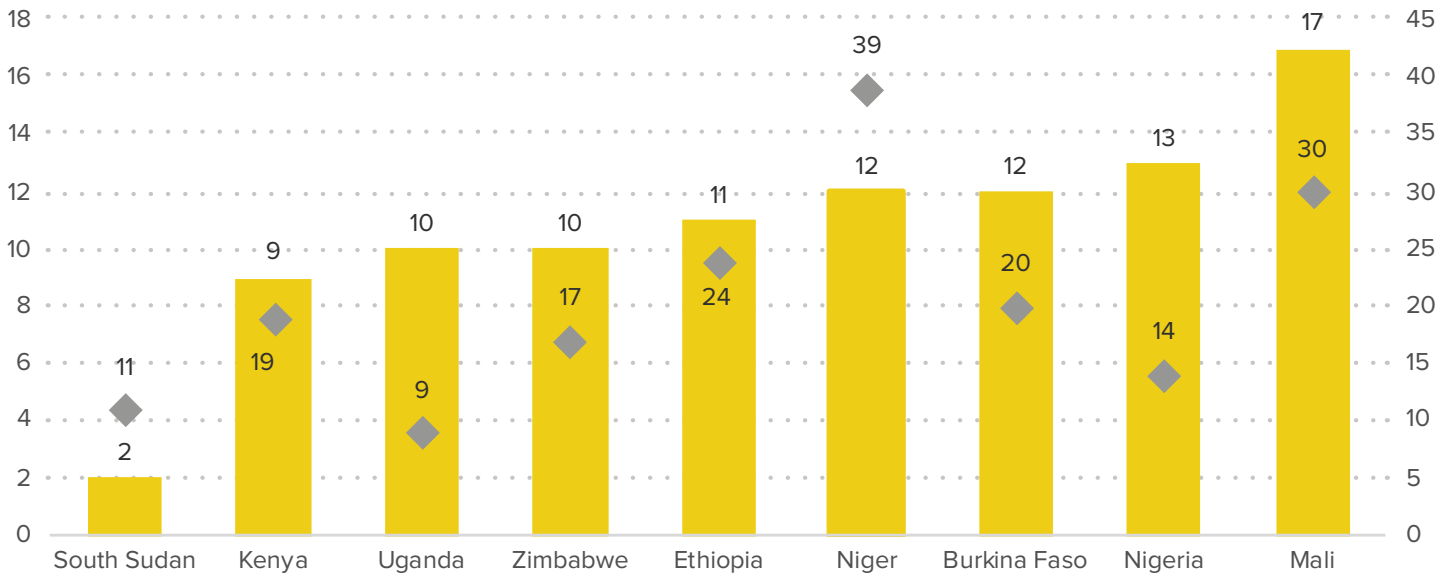
In Niger, where the average age of varieties sold is around 20 years or older for the four focus crops (Table 6). This is calculated as a simple average because data on volumes of production by variety was not available. In 2021, the seed companies and individual seed producers surveyed sold 5 maize, 12 millet, 9 sorghum, and 10 cowpea varieties. Table 6 shows that the average ages of these varieties ranged from 19 to 39 years. The study also recorded the ages of the two most commonly sold varieties, for which the age range was similar - 20 to 37 years. These figures indicate that adoption of new varieties are low, because farmers and producers are not aware of the new, improved, varieties released in the country. According to the INRAN Seed Unit, the low adoption rates are also evidenced by the fact that INRAN receives few requests for foundation seed of new varieties. For their part, seed companies and seed producers invest little in promotional activities when commercializing new varieties.

Figure 2 shows the number and average age of sorghum varieties sold in countries studied by TASAI between 2020 and 2022. Niger is on par with Kenya, Uganda, and Zimbabwe in terms of the number of varieties on the market (9 or 10). However, the average age of sorghum varieties in Niger is twice and three times that of the average ages in those countries, clearly showing the slow rate of variety turnover in Niger.

Table 6: Name and age of commonly sold varieties (2021)

Crop	Number of varieties sold	Names of commonly sold variety	Year of release	Average age of commonly sold varieties (age of all varieties sold)
Maize	5	P3 KOLLO	1984	20 (19)
		NAGODE	2018	
Millet	12	HKP	1978	22 (27)
		Chakti	2018	
Sorghum	9	MOTA MARADI	1994	37 (35)
		IRAT 204	1974	
Cowpea	10	IT90K-372-1-2	1990	37 (38)
		TN 5-78	1978	

Figure 2: Number of varieties sold, and average age of sorghum varieties sold in countries surveyed by TASAI between 2020 and 2022



SOURCES AND AVAILABILITY OF FOUNDATION (BASIC) SEED

Seed companies use basic seed to produce certified seed for sale to farmers. In many African countries, limited access to basic seed from public research institutions tends to constrict the ability of seed companies to scale up production. In Niger, producers source basic seed from the research institution that produces or supplies it. Assuming the seed is available, after specifying the crop, the variety, and the quantity, the research institution invoices the producer for the seed. Once the producer pays for the order, they may pick up the seed.

In Niger, breeder and basic seeds are produced by INRAN, IITA, and ICRISAT. ICRISAT, through its Sahelian Center based in the country, develops improved varieties of pearl millet, sorghum, and groundnut, and produces and disseminates breeder and basic seeds for these varieties in partnership with INRAN and private seed companies, the latter in smaller quantities under contract from the research institutions (MAG 2022a).

In 2021, INRAN and ICRISAT combined accounted for between 76-88% of the sources of basic seed for the focus crops (Table 7). Other sources of basic seed are other seed companies and NGO projects. Further, two seed companies[10] produced their own basic seed for millet and sorghum under the supervision of INRAN (MAG 2022a). However, these other sources combined accounted for no more than 14% of all the basic seed for any of the focus crops, and it is important to note that basic seed distributed by projects also originated from one of the major producers mentioned above. Although most basic seed is purchased, it may be supplied for free by projects.

10 For confidentiality reasons, TASAI studies only specify the names of basic seed producers if they are public entities or if they solely produce basic seed.

Table 7: Sources of basic seed of the focus crops (2021)

Source of foundation seed	Maize		Millet		Sorghum		Cowpea	
	Number of transcations	% of total	Number of transcations	% of total	Number of transcations	% of total	Number of transcations	% of total
INRAN	16	76%	31	59%	28	88%	28	85%
ICRISAT	0	0%	14	27%	0	0%	0	0%
IITA	4	19%	0	0%	0	0%	1	3%
Other	1	5%	6	12%	3	9%	4	12%
Own	0	0%	1	2%	1	3%	0	0%
	21	100%	52	100%	32	100%	33	100%

Seed producers' opinion of the availability of basic seed: Seed producers were asked to assess each source organization on three aspects related to the availability of basic seed: the quality of basic seed received, whether they received the quantity of basic seed that they requested, and the timeliness of delivery of the seed. Across the board, respondents rated "excellent" all three aspects of the process, for all institutions (Table 8). The producers were also highly satisfied with the basic seed received from projects under "other." This is not surprising, since, as mentioned above, these basic seeds also originate from INRAN, ICRISAT, IITA or private companies.

The high satisfaction ratings for pearl millet, sorghum, and maize reflect that the quantities of basic seed produced met the demand for these crops. An exception to this was basic seed for cowpea whose satisfaction rating for the quantities delivered was 85% in 2022 due to insect infestation and diseases that reduced yields. The shortfall likely accounts for the slightly lower ratings for cowpea. This challenge notwithstanding, the overall (combined) ratings for the three indicators were high for all four crops, ranging from 89-94%, suggesting that most seed producers surveyed were satisfied with the quality, quantity, and timeliness of the delivery of foundation seed they ordered and received.

Table 8: Satisfaction rates for the quality, quantity and timeliness of delivery of basic seed (2021)

Crops		ICRISAT	IITA	INRAN	OTHER	OWN
Maize (n=21)	Quality *	N/A	90%	89%	100%	N/A
	Quantity **	N/A	90%	89%	100%	N/A
	Timeliness ***	N/A	90%	91%	100%	N/A
Millet (n=52)	Quality *	97%	N/A	93%	95%	100%
	Quantity **	97%	N/A	92%	97%	100%
	Timeliness ***	97%	N/A	93%	95%	100%
Sorghum (n=32)	Quality *	N/A	N/A	90%	97%	90%
	Quantity **	N/A	N/A	89%	97%	90%
	Timeliness ***	N/A	N/A	93%	90%	90%
Cowpea (n=33)	Quality *	N/A	100%	88%	93%	N/A
	Quantity **	N/A	100%	85%	88%	N/A
	Timeliness ***	N/A	100%	91%	93%	N/A

extremely poor | poor | fair | good | excellent

*Quality of basic seed: Seed producers' satisfaction with the quality of basic seed received

**Quantity of basic seed: Seed producers' satisfaction with the quantity of basic seed received

***Timeliness of delivery: Seed producers' satisfaction with the timeliness of delivery of basic seed

INDUSTRY COMPETITIVENESS

NUMBER OF ACTIVE SEED COMPANIES

Competition breeds excellence: the presence of more active seed companies increases competition and creates incentives for companies to innovate and improve. A vibrant seed sector depends on a robust private sector in which seed companies invest in developing, producing, processing, and marketing improved varieties to farmers. This section tracks the number of registered seed companies that produced and marketed seed of one or more of the focus crops.

According to the DCCS, in 2021 18 seed companies actively produced and marketed seed of one or more of the four focus crops in Niger (Table 9). Millet was produced and marketed the most frequently (17 companies), followed by sorghum (16), cowpea (12), and maize (10). (Table 9).

Table 9: Breakdown of active seed companies in Niger (2021)

Crop	Number of active seed Companies
Maize	10
Millet	17
Sorghum	16
Cowpea	12
Total*	**18**

* The total number of seed companies differs from those by crops because some seed companies produce more than one crop.

GENDER IN MANAGEMENT OF SEED BUSINESSES

TASAI also tracks the number of women in management and ownership positions in seed companies. For this study, only seed companies were considered, since these have structures where management positions are explicit. The positions include managing director/chief executive officer, distribution manager, operations manager, finance and administration manager, research and development manager, country lead, and sales and marketing manager.

As shown in Table 10, overall, 16% of the management positions across the 18 seed companies surveyed were held by women. More than half (56%) of the seed companies surveyed reported having at least one woman in a management position, primarily in positions of financial management or seed marketing. One of the 18 companies had a woman top manager (CEO and similar), and none of the companies was owned by a woman.

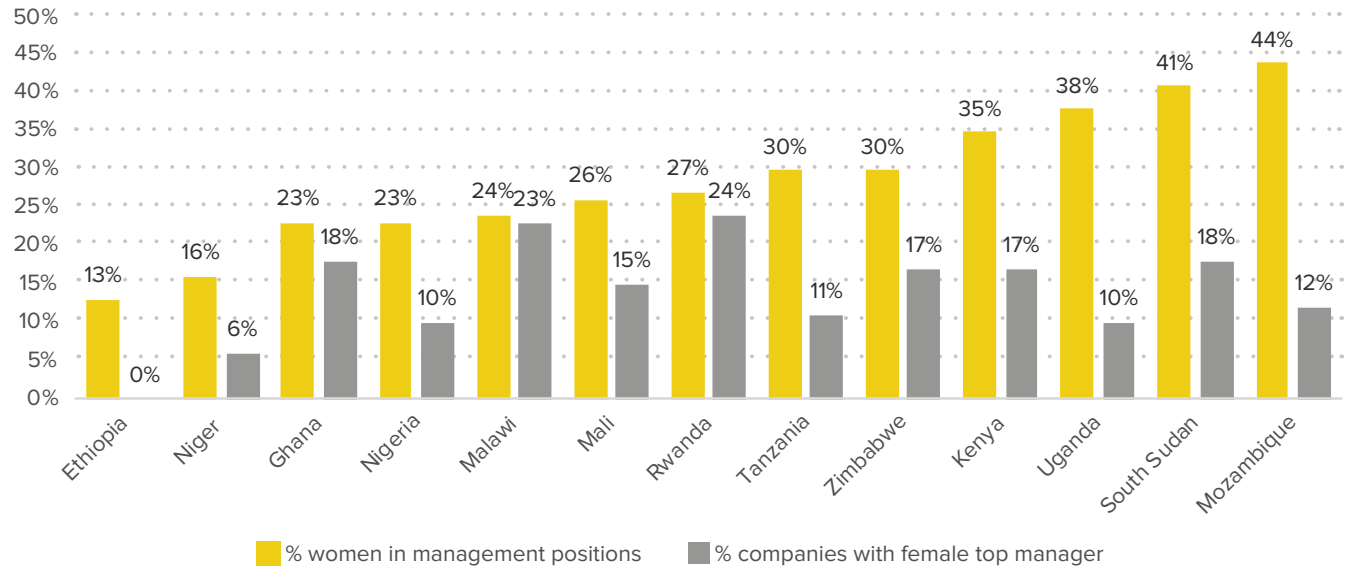
Table 10: Gender in management of seed businesses in Niger (2021)

Gender indicator	Number	%
Women in management positions (n=178)	**29**	**16%**
Number of seed companies with at least one woman in a management position (n=18)	**10**	**56%**
Companies with a woman top manager (n = 18)	**1**	**6%**
Companies with a woman owner (n =13*)	**0**	**0%**

* The companies that did not have explicit ownership were 3 regional seed companies and 2 government-owned entities.

Figure 3 compares the status of gender in seed company management across 13 countries that have been surveyed by TASAI between 2020 and 2022. Niger is second to last in terms of women's participation in the management of seed companies as measured by TASAI.

Figure 3: Percentage of women in seed company management in countries surveyed by TASAI between 2020 and 2022



PRODUCTION AND SALE OF CERTIFIED SEED

To measure the overall size of a country's seed sector, TASAI tracks the volumes of seed produced and sold for the four focus crops. The data are presented as aggregate quantities in metric tons (MT) of certified seed sold in the data collection year, as reported by active seed companies.

Table 11 compares seed production data sourced from the government (MAG 2022b), as well as production and sales data collected by TASAI. The government and TASAI data differ significantly for all four crops. Several factors account for this, including the fact that not all active seed producers responded to TASAI's request to be surveyed, explaining the lower totals reported by TASAI for millet, sorghum, and cowpea. At the same time, the government data reflects planned production volumes submitted by seed producers to government, while TASAI data is based on the volumes produced. This explains why the figure for maize recorded by TASAI is over 6 times that reported by government: one of the seed companies surveyed by TASAI produced maize seed without having registered its plan with the government. The differences indicate that accurate production data is difficult to come by, but, overall, millet is the most important crop, accounting for approximately 75% of all seed produced (based on either government or TASAI data).

As shown in Table 11 seed sales were lower than seed production in 2021 for maize, sorghum and cowpea. However, for millet seed, the sales were much lower than production.

Table 11: Seed production and sales (2021)

Crop	Seed production in MT (Government data)	Seed production in MT (TASAI data)	Seed sales in MT (TASAI data)
Maize	77	497	300
Millet	5,604	3,509	2,298
Sorghum	574	336	246
Cowpea	1,099	388	291

MARKET SHARE OF TOP SEED COMPANIES

Competition among seed companies benefits farmers via lower prices, wider choices, increased innovation, and better customer service. To assess the level of industry market concentration, TASAI uses seed sales data for each crop, as reported by seed companies, to calculate the market share of the four largest firms, also known as the four-firm concentration ratio (CR4), as well as the Herfindahl-Hirschman Index (HHI).[11]

In total, there are 9 different producers (8 companies and 1 producer) among the top 4 producers of each of the four focus crops, meaning that several companies are among the top 4 seed producers for multiple crops. In 2021, the market shares of the top four seed producers (CR4) ranged from 48% (millet) to 75% (maize) across the four crops (Table 12). The HHI scores signaled competitive markets for millet, sorghum and cowpea, and a moderately competitive market for maize. Together, the HHI and CR4 scores indicate that, in 2021, no single seed producer or group of seed producers dominated the seed markets for the four focus crops in Niger.

Table 12: Market share of top four seed producers (CR4) and market concentration (HHI) (2021)

Crop	CR4 (out of 100%)	HHI
Maize	75%	2,848
Millet	48%	816
Sorghum	61%	1,341
Cowpea	71%	1,658

The level of competition was partly influenced by the number of seed producers. As was shown in Table 3, there were only 15 seed producers for maize seed, compared to 39 for millet seed, 27 for sorghum seed and 20 for cowpea seed surveyed. The low number of maize seed producers is partly due to the unsuitable climatic conditions for maize production; while new maize varieties with climate-smart features have been developed, they were not yet on the market in 2021. In contrast, there were many more seed producers for millet, sorghum and cowpea, because those are staple crops in Niger and the country has more suitable agro-ecological conditions for their production.

11 The HHI is a measure of market concentration and is calculated by squaring the market share of each firm competing in a market, and then adding up the results. It ranges from close to zero for perfect competition to 10,000 for monopoly. The scale for HHI scores, ranges from extremely low to extremely high levels of market concentration: less than 1,000 is extremely low, 1,000-1,999 is low, 2,000-2,999 is moderate, 3,000-3,999 is high, and greater than 4,000 is extremely high, i.e., monopoly or near monopoly.

MARKET SHARE OF GOVERNMENT PARASTATAL

In some countries, public entities are still active players in the marketing and sale of certified seed. Public seed companies can play a critical role in meeting farmer demand for varieties that private seed companies deem less profitable. In addition to seed production, public companies may support other national objectives, such as university training and research. However, state-owned companies may benefit from preferential treatment, less stringent enforcement of regulations, access to competitor information, and indirect production subsidies. Collectively, these privileges can result in unfair competition against purely private seed companies.

In Niger, the government is involved in seed production through regional seed multiplication centers called *Centres régionaux de multiplication des semences* (CRMS). These centers were established in the 1970s to support the production of first-generation certified seed. They are located in five regions of the country. Although not all of them produce seed every year, they were included in the survey. Accordingly, in 2021, two centers, located at Doukou-doukou in Tahoua region and Guéchémé in Dosso region, reported a combined production of 18 MT of certified seed for pearl millet, sorghum and cowpea. Two other centers, located in Maradi (Gouroungoussaou) and Zinder (Angoual Gamdji) did not report any seed production in 2021. In Kounroungassaou center the land was utilized by farmers' groups from neighboring villages. As seen from the data above, the centers did not produce seed in quantities that would impact the private sector's growth potential at this point.

SEED SALES TO DIFFERENT CATEGORIES OF BUYERS

The TASAI study tracked six different categories of seed buyers in Niger in 2021: farmers, agro-dealers, NGOs, seed companies, the government, and other buyers (such as seed intermediaries who buy seed from one producer to sell to another). As shown in Figure 4, in 2021, NGOs were the most important buyers for cowpea, sorghum and millet responsible for 23 to 42% of sales. Government projects were the most important buyer of maize seed at 40% of the sales. The next two largest buyers were other seed companies and farmers (through direct sales); their shares ranged from 11-25%, depending on the crop. Unlike in other countries, agro-dealers are a minor source of purchases in Niger, accounting for between 4-14% of all sales across the four crops, indicating that this channel is underdeveloped. Finally, the TASAI study recorded sales to the government for millet (21% of total sales) and sorghum (3% of total sales) only, which correspond to 483 MT and 7 MT of seed, respectively. These figures are significantly below the figure of 10,000 MT of seed (for all four crops combined) distributed, as reported by the government. However, since some seed producers

sell to other seed companies and intermediaries, who may also sell to the government, some of the sales to government may be captured under the buyer 'other seed companies.'

Sales to NGOs and government managed development projects. As seen below, NGOs and government managed development projects are a major buyer of seed in Niger, indicating the role institutional buyers play in the seed sector. The most prominent NGOs are the International Committee of the Red Cross (ICRC), Concern International, Samaritans' Purse and Welthungerhilfe (WHH). In addition, the main government managed development projects that purchase and distribute certified seed include the *Projet de Développement de l'Agriculture Familiale* (PRODAF), co-financed by the International Fund for Agricultural Development (IFAD) and the Global Environment Facility (GEF), and the *Projet d'Appui à l'Agriculture Sensible aux Risques Climatiques* (PASEC) implemented by the government of Niger with financial support from the World Bank. The seed purchased by NGOs and government projects is mostly distributed free of charge to farmers (who receive certified seed) to increase their production or to farmers' organizations (who receive basic seed) or even to seed companies (who receive breeder seed). NGOs purchase and distribute certified seed, basic seed and breeder seed; certified seed is provided to farmers generally free of charge, basic seed is given to farmers' organizations, while breeder seed is provided to seed companies.

Figure 4: Seed sales by category of buyers (2021)

Percentages in Figure 5 may not total 100% due to rounding off.

SEED IMPORT AND EXPORT PROCESS

Efficient seed import and export processes extend the seed market beyond national borders. While seed companies benefit from an expanded market, farmers can access a wider range of varieties from across the region. The length of the import process in days is measured as the sum of the number of days used to obtain import documentation (import permit, phytosanitary certificates, and an International Orange Certificate[12], if applicable) and the number of days to clear seed at the border. It excludes transportation time.

The National Seed Policy (*Politique Semencière Nationale* (PSN)) provides a framework for the importation and exportation of seed. However, the decree that outlines specific seed import and export procedures in line with the ECOWAS seed regulations, has not been developed. Currently, the importation of agricultural goods including seed is overseen by the *Direction Générale de la Protection des Végétaux* under the Ministry of Agriculture. Further, the Ministry of Trade registers importers, while the Ministry of Finance collects import taxes.

In 2021, most seed imports to Niger were for vegetable seed; as such, they fell outside the scope of this study. The one recorded import transaction was for 0.5 MT of cowpea seed from Burkina Faso. The importing company reported that the process took two months and rated the process "good" at 70%. No seed exports were reported for the focus crops in 2021. Such low numbers of import and export transactions are to be expected when a country is in the early stages of seed sector development and where the use of improved seed is limited.

12 The International Orange Certificate is issued by a laboratory accredited by the International Seed Testing Association (ISTA) when both sampling from the seed lot and testing of the sample are carried out by the same laboratory.

SEED POLICY AND REGULATIONS

LENGTH OF VARIETY RELEASE PROCESS

Plant variety release is the process during which new varieties undergo various tests for yield, Value for Cultivation and Use (VCU), and Distinctness, Uniformity, and Stability (DUS). Varieties that perform satisfactorily in these tests are approved for release by the relevant authorities. A vibrant seed sector has a functional variety release system that is well understood by the relevant actors and is followed diligently. Lengthy and/or costly variety release processes can limit the number of released varieties, which can adversely affect farmer choice. The length of the variety release process is calculated from the date the variety is submitted to the variety release committee to the date when the variety is approved for release. The calculation does not include the time the breeder spends developing the variety.

Niger's official variety registration process launched in 2012, when the government set up the *Comité National de Semences* (CNS) to oversee the implementation of the seed policy and regulations. In addition, the *Ministère de l'Agriculture* developed the Manual of Procedures for the Registration of Varieties in the Regional Catalogue of Species and Varieties/ *Manuel de Procédures pour l'inscription des variétés au Catalogue Régional des espèces et variétés* in April 2016 (MAG 2016c). Both actions complied with the ECOWAS Seed Regulations of 2008, contributing to regional harmonization efforts in the country.

The first step of the process is for the applicant – typically, a breeder or a seed company - to submit the required forms and supporting documentation to the *Direction du Contrôle et de la Certification des Semences* (DCCS), the secretariat for the CNS, located in Niamey. The application typically includes the variety description based on UPOV standards, as well as results of the DUS and VCU tests. The latter are usually conducted by the applicants, because, although the Manual of Procedures for the Registration of Varieties in the Regional Catalogue of Species and Varieties stipulates that they be carried out by the CNS, the latter lacks funding to run them. Since most applicants are breeders at INRAN or ICRISAT, they use their organization's facilities to conduct one DUS test (at one location) and two VCU tests (at two locations for two seasons).

The DCCS examines the application and, if necessary, requests additional information from the applicant. When the application is complete, the DCCS informs the CNS, whose *ad hoc* technical committee, the *Comité Technique d'Homologation Variétale* (CTHV), makes the final decision on the applications. The CTHV does not meet regularly; rather, when a certain number of applications have been received and funding is available, the CTHV sets the location and date for its next meeting. Between 2014 and 2023, the CNS met five times - in 2018, 2019, 2020, 2021 and 2023.

The CTHV reviews the applications and may request additional information before it approves or rejects a candidate variety. If the variety is accepted, the CTHV informs the CNS, which in turn prompts the Ministry of Agriculture to issue a ministerial decision on the official registration of the new varieties in the country. The last step of the process would be to enter the released varieties in the national and regional variety catalogs. However, as we have noted, the national variety catalogue has not been updated since it was first released in 2012 (MAG 2021). Thus, in practice, once varieties are approved by the CNS and the Minister signs the list, they may be produced in the country regardless of whether they are included in the catalogue. If breeders send their varieties to the regional seed council, once approved, the new varieties are registered in the ECOWAS catalogue, and they may be produced and marketed in the ECOWAS-UEMOA-CILSS member states.

To date the CNS has mostly relied on external funding from partners and projects to cover the cost of the CTHV committee meetings. Thus, in the absence of outside funding, regular meetings are not assured. Importantly, this also means that Niger does not consistently follow the ECOWAS seed regulations, which recommend that member countries prioritize funding such activities through the national budget.

The 2022 TASAI study collected data on the length of the variety release from three breeders. Two breeders – one maize and one sorghum breeders who registered new varieties in 2018 and 2019, respectively – they reported a duration of 36 months and a satisfaction rating of 40% ("fair") for maize and 30% ("poor") for sorghum. In contrast, one seed company that went through the process in 2018 reported a duration of 6 months, but the short duration is largely because the company already had available DUS data from its parent company located outside Niger, and only the VCU tests needed to be carried out locally, which INRAN completed under contract with the company. Reflecting the shorter timeline, the satisfaction rating reported by the company was "excellent" at 90%, though it is important to note that this case was probably an exception rather than the norm.

COST OF VARIETY RELEASE PROCESS

In well-functioning seed systems, the costs of releasing a variety should not be so high as to disincentivize variety releases altogether. In Niger, the CNS is yet to set the official fees for variety release, and breeders do not pay any official fees for DUS and VCU tests. However, the two INRAN breeders who carried out these tests in 2022 reported that their institutions incurred 8,939,800 CFA (US$ 13,399[13]) for the maize trials and 6,000,000 CFA (US$ 8,993) for the sorghum trials (Table 13). For maize, the costs covered a single-location field trial related to DUS varietal characteristics and a two-location trial over two years related to the agronomic performance of the candidate varieties. The third and final test was related to uses, cooking qualities, and consumer preferences. Details for sorghum were not available.

13 Average exchange rate for 2022 was 667.2 CFA/US$

Table 13: Costs of variety release

Crop	Average costs incurred by public breeders (US$)			
	DUS	VCU	Other	Total
Maize	3,796	8,104	1,600	13,399
Millet	-	-	-	-
Sorghum	2,998	4,496	1,499	8,993
Cowpea	-	-	-	-

STATUS AND IMPLEMENTATION OF NATIONAL SEED POLICY FRAMEWORK

Well-functioning formal seed sectors have effective coordinating institutions that work well together, following rules and procedures stipulated in clearly defined and regularly updated legal instruments. Seed regulations give structure to the formal seed sector. The TASAI study assesses stakeholder perspectives on various aspects of seed regulations, including whether they are supportive to the growth of the seed sector, the role stakeholders play in their design and implementation, stakeholders' awareness of the laws and regulations, the presence of an enforcement agency, the costs of regulation, and the effectiveness of punitive measures.

Table 14 lists the key seed policy instruments governing the seed industry in Niger and provides detail on their status and their degree of effectiveness to regulate the seed sector in the country. The table also provides information on the status of seed sector harmonization with the regional (ECOWAS) regulations.

Table 14: Key seed policy instruments in Niger

National instruments		
Instrument	**Description**	**Status/degree of implementation of policy instruments**
La Politique Semencière Nationale (2012) (MAG 2012a) [seed policy]	Adopted in December 2012, the main objective of the policy is to create a conducive environment for the development of a strong seed industry. It defines the roles and responsibilities of seed actors and sets institutional and legal frameworks for its implementation.	The seed policy lacks an operational work plan (strategy), and it has not been revised.
LOI N° 2014-67 du 05 Novembre 2014 (Republique du Niger 2014a) [seed law]	Enacted in 2014, the seed law is the implementing instrument of the ECOWAS seed regulations in Niger. It defines the instruments and bodies that coordinate seed-related activities, including the management of varieties and species, as well as legal sanctions for violations.	
Régulation 1: Arrêté N°121 MAG/ DGA du 16 septembre 2014 *portant création, organisation, attributions et fonctionnement du Comité National des Semences des Espèces Végétales et Plants* (Republique du Niger 2014b)	Regulation 1 established the CNS and defined its roles and responsibilities and set up the CTHV. Subsequently in 2016 and 2018 the composition of the CNS was changed, but the responsibilities and other instruments set out in the regulation remained same.	Key institutions leading implementation of seed regulations are operational and include the DCCS (overseeing seed production and certification), the CNS (advising on the implementation of seed policy and regulations), and the CTHV (evaluating varieties for registration). Although these stakeholders are aware of their mandate, their performance is constrained by a lack of resources.
Régulation 2: Arrêté 122 MAG/ DGA du 16/09/2014 *Instituant un Catalogue National des Espèces et Variétés (MAG 2014a)*	Regulation 2 institutionalized the national variety catalog in Niger. It outlines the responsibility of the CNS in managing the catalog.	
Régulation 3: Arrêté N°124 MAG/ DGA du 16 septembre 2014 *portant adoption des règlements techniques annexes relatif aux règles régissant le contrôle de qualité et la certification des semences des espèces végétales et plants (MAG 2014b*	Regulation 3 equipes the CNS with instruments to control seed production and commercialization in the country.	
Régulation 4: Arrêté 125 MAG/EL du 31/05/2017 *portant conditions d'admissions au contrôle des professionnels des semences (MAG 2017a)*	Regulation 4 outlines the registration requirements for private seed entities, including seed producers.	
Régulation 5: Arrêté 126 MAG/EL du 31/05/2017 *portant institution et délivrance de la carte professionnelle (MAG 2017b*	Regulation 5 institutionalizes the delivery of professional cards that are given as proof of registration of entities engaging in production, processing and sales.	
Régulation 6: Arrêté 127 MAG/EL du 31/05/2017 *fixant les superficies minimum et maximum et les délais de déclaration des cultures (MAG 2017c)*	Regulation 6 specifies the minimum and maximum limits on size of the land under seed production as well as the periods for crop declarations that precede seed inspection.	

Régulation 7: Arrêté 128 MAG/EL du 31/05/2017 *fixant les conditions d'emballage, de stockage et de transport des semences (MAG 2017d)*	Regulation 7 sets requirements for the packaging, storage, and transportation of certified seed.
Régulation 8: Arrêté conjoint N°215 MAG/EL/MF du 11 novembre 2016 *portant règles régissant l'obtention d'agreement pour la commercialisation de semences des espèces végétales et plants (MAG 2016a)*	Regulation 8 is a joint regulation between the *Ministère de l'Agriculture* and the Ministry of Finance and sets requirements for the registration of seed businesses.
Régulation 9: Arrêté conjoint N°214 MAG/EL/MF du 11 novembre 2016 *fixant les modalités d'acquittement et de perception des taxes et redevances dans le cadre du contrôle, de la certification et de la commercialisation des semences des espèces végétales et plants (MAG 2016b)*	Regulation 9 is a joint regulation of the *Ministère de l'Agriculture* and the Ministry of Finance that outlines the procedures for the payment of taxes related to the seed certification process.

Seed producers' assessment of implementation of seed regulations:

Overall, seed producers' rated their satisfaction with the implementation of seed regulations "good" at 64%.

Regional regulatory instruments/regimes		
Instrument	**Description**	**Status/degree of implementation of policy instruments**
ECOWAS Seed Regulations	Niger adopted the ECOWAS seed regulations in 2008 and, in subsequent years, passed several decrees to implement different aspects of the regulations. The ECOWAS Seed Regulations stipulate that the country do the following: 1. set up a national seed committee, 2. issues a decree for seed import and export, 3. regularly updates the national variety catalogue, 4. creates a seed support fund, and 5. enacts other clauses that support the provision of quality improved seed to farmers.	As of 2023, Niger partly meets the requirement for a national seed committee: • While Arrêté N°121 MAG/DGA of 16 September 2014 established the *Comité National de Semences* (CNS), the committee is not fully functional as the variety release subcommittee does not meet regularly. • The decree for seed import and export has not been implemented. • In an effort to meet the requirement for an updated variety release catalogue, the *Ministère de l'Agriculture* adopted a National Catalog of Crop Varieties and Plant Species in Arrêté 122 MAG/DGA du 16/09/2014. The catalogue referenced in the Arrêté was the 2012 version of a compilation of varieties developed by INRAN but that were not on any official list. The catalogue was last updated in 2021. • The seed sector support fund has not been set up.

EFFORTS TO ERADICATE COUNTERFEIT SEED

Counterfeit seed threatens the seed sector in two important ways: first, it reduces farmers' confidence in certified seed when farmers unknowingly plant inferior quality grain labeled as certified seed. Second, it threatens the success of efforts to increase the adoption of improved varieties. TASAI tracks the number of cases of counterfeit seed reported by seed companies and the government in the data collection year. In addition, seed companies report their level of satisfaction with government efforts to eliminate counterfeit seed. The figure is likely to be an underestimate, as selling counterfeit seed is illegal and, as is often the case with illegal activities, it is difficult to observe and track.

The DCCS, which oversees seed quality, does not have a mechanism for tracking and reporting counterfeit seed in Niger. For the moment, the government's efforts focus on seed quality assurance activities as outlined in the seed law. Further, these activities are limited to the production stage and do not include the processing and marketing stages. Reflecting this reality, the TASAI study recorded no cases of counterfeit seed reported by government in 2021, (Table 15). Notably, responding to the same question, seed companies reported a single case of counterfeit seed. However, due to the prevalence of non-certified seed, it is difficult to distinguish between seed produced legally but not certified and grain that is marketed fraudulently as certified seed. The seed producers surveyed rated their satisfaction with government's efforts to address the challenge of counterfeit seed as "poor" (27%), an indication of the need to put in place mechanisms to counter the production and sale of counterfeit seed. Measures that have worked in other African countries include enhanced surveillance and monitoring of seed production fields and facilities where the seed is processed and sold, as well as the use of tamper-proof labels.

Table 15: Industry satisfaction with government efforts to address counterfeit seed

Indicators	2021
Number of cases of counterfeit seed (seed companies)	1
Number of cases of counterfeit seed (government)	0
Seed industry satisfaction with government efforts to address counterfeit seed (out of 100%)	27%

extremely poor | poor | fair | good | excellent

USE OF GOVERNMENT SUBSIDIES

Seed subsidies are intended as a short or medium-term measure to encourage farmers to adopt improved crop varieties. The design and execution of subsidy programs, in terms of the scale, targeting, distribution arrangements, and payment systems, may contribute to the development of the seed market in positive ways or it may be disruptive to market forces.

Niger's government buys seed through an emergency seed initiative called the *Programme de soutien à la campagne Agricole*. The program supports farmers who have been affected by drought and other natural disasters and provides them with seed kits for cereals (millet, sorghum, and sometimes rice or maize) and one legume crop (cowpea). The government procures the seed from producers through tenders. All seed producers registered in the *Annuaire national des disponibilités de semences/ National Seed Availability Directory* are eligible to apply. Other entities may also participate as long as they follow the government procurement procedures. The selected entities produce the seed, which is delivered to the sub-regions of the country, where it is received by the committee responsible for early warning and disaster management. Next, the seed is delivered to the villages, where it is distributed by the local village committee headed by the village chief, who is assisted by technical officers from the government. Beneficiaries may not choose the varieties they receive.

Thirty-six out of 40 producers surveyed were aware of the call to supply seed to the subsidy program. However, only nine actually sold seed to the program in 2022. These nine producers were asked to rate three aspects of the program: openness and transparency of the procurement process, predictability of the procurement process, and efficiency of payments. Overall seed producers rated their satisfaction with the openness and transparency of the seed procurement process "fair" at 40% (Table 16). Seed producers' satisfaction with the predictability of the seed procurement process was "poor" (33%). When asked to provide a reason for their rating, multiple respondents shared that they had no advance knowledge of the quantities the government was going to buy, which hindered their ability to plan effectively for the production. The satisfaction rating for the efficiency of payments was "poor" at 27%. Related to this aspect, several seed producers reported that they had experienced delays with payment. Two of the 9 seed producers who had supplied seed to the subsidy program claimed that, while they provided good quality seed to the program, they were aware that some participating providers were not registered producers and provided low-quality product (grain as opposed to seed) to the program, thereby also threatening the quality of seed distributed to beneficiaries.

Table 16: Seed companies' opinion of the implementation of the government subsidy program (2021)

Aspect of the government seed subsidy program	Opinion rating out of 100%
Openness and transparency of the seed procurement process	40%
Predictability of the seed procurement process	33%
Efficiency of payments	27%

extremely poor | poor | fair | good | excellent

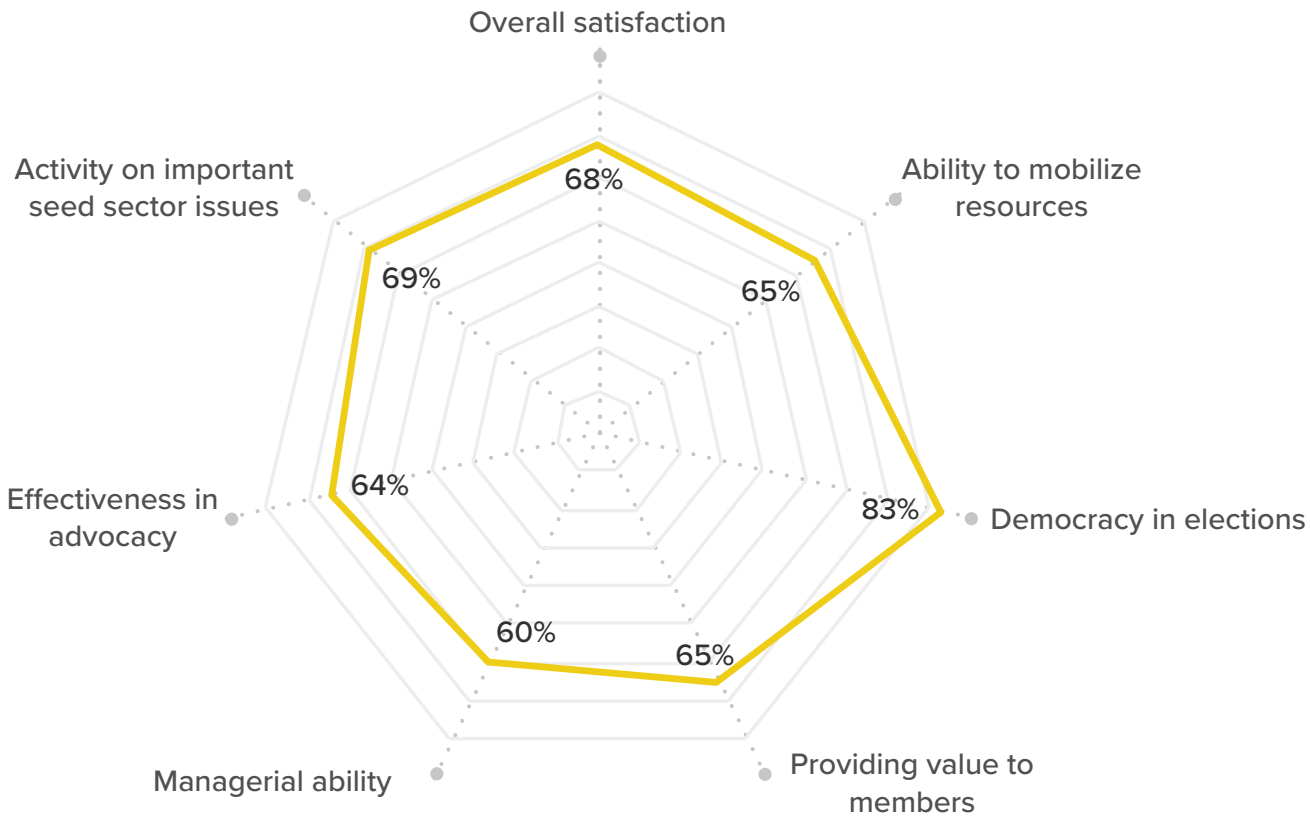
INSTITUTIONAL SUPPORT

Well-functioning national seed trade associations play a key role in representing the interests of the industry and engaging with the government. The membership of the national seed associations includes seed companies, seed growers, seed cooperatives, seed associations, individual seed producers and, at times, agro-dealers.

Niger's national seed producers' association, the *Association des Producteurs Privés des Semences du Niger (APPSN), was established in 1999. The main objectives of the association are to i*mprove seed production, processing, and distribution in Niger, to promote improved crop varieties in rural areas, to increase the organization of the seed value chain in Niger, and to improve food security in the country by facilitating farmers' access to high-quality seed of improved varieties.

In 2021, the APPSN had 258 members. Of the 40 seed producers interviewed for this study, 14 were APPSN members. These members' overall satisfaction with the APPSN was "good" at 68% (Figure 5). Broken down by specific service areas, the satisfaction ratings reported ranged from 60% to 69%, with the exception of "democracy in elections," which was rated "excellent" (83%). The members surveyed were asked to identify priority issues for APPSN to focus on. A most commonly cited request was that APPSN should link its members who are registered seed suppliers to programs that provide seed to government, NGOs, and other projects. In addition, the members interviewed expressed concern that the free distribution of low-quality seed would disrupt the seed market.

Figure 5: Members' opinion of the Association des Producteurs Privés des Semences du Niger (2022)



ADEQUACY OF SEED INSPECTORS

Seed inspection services ensure that certified commercial seed meets the regulatory quality standards. To provide adequate inspection services requires sufficient numbers of well-resourced inspectors. TASAI studies track the number of inspectors and other information pertinent to their effectiveness, such as the availability of resources and the use of (new) digital tools.

In Niger, the process of seed inspection for both quality control and certification broadly follows ECOWAS procedures and are adapted to the national context in the technical guidelines issued by the *Ministère de l'Agriculture* (MAG 2016b). The guidelines specify two main steps: field inspection and laboratory control. The former includes checking the cropping history of the registered seed plots, the isolation requirements, the varietal purity in the field, the level of infection and infestation by diseases and pests, and the presence of harmful weeds. The inspection is to be carried out by district inspectors, who submit the results to the head office. After a successful field inspection and harvest, samples of seed lots are sent to regional or national laboratories to test for physical purity, weight, moisture content, and germination. The laboratories do not conduct varietal purity tests.

In 2021, the DCCS (entity in charge of seed inspections) employed 61 seed inspectors (56 men and 5 women) (Table 17). There are only public inspectors in the country, as Niger does not have any private seed inspectors. While guidelines for seed inspections are clearly defined by the ministry, interviews with seed producers and DCCS staff revealed that the country does not have enough staff capacity and resources to meet the need for field inspections at all the seed production sites. To overcome this challenge, the regional seed inspectors in Zinder, Tahoua, and Maradi reported that they pooled field inspectors in groups in order to be able to inspect all declared fields in the region. To gauge seed producers' perception of the adequacy of seed inspectors, the TASAI study asked for their opinion on the same, and, despite the insufficient capacity reported earlier, seed producers' satisfaction rating with the adequacy of seed inspection service was "excellent" at 82%, reflecting seed producers' opinion that field inspectors do a good job overall. Nevertheless, the system lacks traceability and monitoring at points of sale, as evidenced by the fact that low quality seeds or grains are sometimes listed in the official listing as certified seed, or counterfeit seeds are marketed to consumers as certified seed.

Table 17: Number and rating of the adequacy of seed inspectors (2021)

Indicators	Number
Number of public seed inspectors	61
Number of private seed inspectors	0
Total number of seed inspectors (private and public)	61
Seed industry satisfaction with seed inspectors (out of 100%)	82%

extremely poor | poor | fair | good | excellent

SERVICE TO SMALLHOLDER FARMERS

ADEQUACY OF EXTENSION SERVICES

Well-functioning agricultural extension services are critical to the successful adoption of improved seed by smallholder farmers. TASAI tracks the average number of agricultural households served by one extension officer. The lower this ratio, the better access farmers have to expert information and advice on how to access and use improved seed and other relevant agricultural technologies. This indicator tracks the number of extension officers by sector (public and private) and gender; it is not crop-specific.

Public agricultural extension activities are the responsibility of three different ministries: the Ministry of Agriculture, the Ministry of Livestock, and the Ministry of Forestry and Environment Management. All three are responsible for the diffusion of new technologies developed by the research institutions, and they operate through national directorates and offices at the regional, departmental, and district levels. A 2016 study by Rigourd et al. 2016 reported that the three ministries employed about 3,000 agricultural extension agents at the regional and district levels. An estimated 750 of these officers worked as extension agents in direct contact with seed producers. According to the same study, the ratio of extension workers to farmers ranged from 1:3,000-6,000. In contrast, in response to the TASAI survey, the Ministry of Agriculture provided the figure of 284 public agricultural extension officers in 2022 (Table 18). In addition, the seed companies surveyed reported working with a total of 58 private extension agents, making the total 342 extension agents. This number is significantly lower than the 750 reported in 2016, although the calculated ratio of extension officers to agricultural households is 1:4,500, which falls within the range estimated by Rigourd et al.

Regardless of which number one considers, the number of extension agents in Niger is well below what would be adequate given the country's size. The extension system is also plagued by a lack of coordination, a reason cited by seed companies for hiring their own, private, extension agents.

Another source of private extension services are NGOs and government development projects. This strategy for rural extension services was proposed by Rigourd et al. (2016). However, these extension services have their limitations: one is that they may be restricted to the specific technologies the project focuses on, although there are some recent initiatives that offer a broader range of services. Two, tracking NGOs and government projects is difficult because they are not centrally managed, and their projects tend to be short term.

In 2017, the government developed a national extension strategy called *Système National de Conseil Agricole* (SNCA) (République du Niger 2017a). It also created the *Agence pour la Promotion du Conseil Agricole* (APCA) to organize all public and private agricultural advisory services for a more impactful approach (République du Niger 2017b). However, neither has been operationalized to date, and the government appears to have no plans to train additional extension agents at present, so the challenges of extension are likely to persist for some time.

Table 18: Number and adequacy of agricultural extension services

Indicators	2022
Number of public extension officers employed by the government	284
Number of private extension officers employed by seed companies	58
Total number of extension officers	342
Ratio of extension officers to agricultural households	1: 4,500

CONCENTRATION OF THE AGRO-DEALER NETWORK

Agro-dealers play a key role in expanding the reach of Africa's seed distribution systems, connecting seed companies to individual farmers, especially in hard-to-reach rural areas. They are often the main point of sale for certified seed. A higher concentration of agro-dealers means that smallholder farmers have greater access to improved seed. TASAI tracks the number of agro-dealers and, where possible, disaggregates registered from non-registered agro-dealers. This indicator is not crop specific.

Agro-dealers in Niger operate small-to-medium-scale enterprises and are engaged in the sale of agricultural inputs, such as fertilizer, seeds, and agrochemicals. Prior to the introduction of agro-dealers, the distribution of agricultural inputs was carried out through *boutiques d'intrants communautaires* or BICs. The BICs were established in

rural areas through FAO-funded projects in the late 1990s. Subsequent projects adopted the same strategy, leading to the establishment of many BICs in the country. The BICs pre-date the introduction of agro-dealers; in contrast to agro-dealers, which are private, for-profit businesses, the BICs are more community oriented and were set up by government to facilitate access to agricultural inputs. They are registered by the government through farmers' groups or cooperatives. Some agro-dealers rely on them to access markets in remote areas.

The distribution of agricultural inputs by private registered agro-dealers started in 2017. Depending on their activities, agro-dealers may be registered by one or more of the following entities: (i) those that distributed seed are registered by the *Direction Générale de l'Agriculture* (DGA) through the DCCS (ii) those that distribute phytosanitary chemicals are registered by the *Direction Générale de la Protection des Végétaux* (DGPV), and (iii) those that distribute fertilizer and equipment are registered by the *Centrale d'Approvisionnement des Intrants et Matériels Agricoles* (CAIMA). In most cases, agro-dealers distribute and market all types of agricultural inputs and end up being registered by all three entities. In recent years, several projects have tried to create agro-dealer organizations but have not been successful.

Since the number of registered seed companies is small, the majority of agrodealers registered by the DCCS to market seed are individuals. At the time of the current study, 71 agro-dealers were registered to market seed (Table 19). Seed industry satisfaction with the agro-dealer network was "fair" at 52%, reflecting insufficient amount of improved seed on the market. Most of the limited amount is distributed by institutions or a few seed companies that have their own distribution channels outside government. Agro-dealers are a minor source of seed distribution, and they operate primarily in urban areas.

Table 19: Number of agro-dealers and satisfaction with the agro-dealer network (2021)

Indicator	Number
Number of agro-dealers	71
Average number of agro-dealers per seed company	7
Seed industry satisfaction with agro-dealer network (out of 100%)	52%

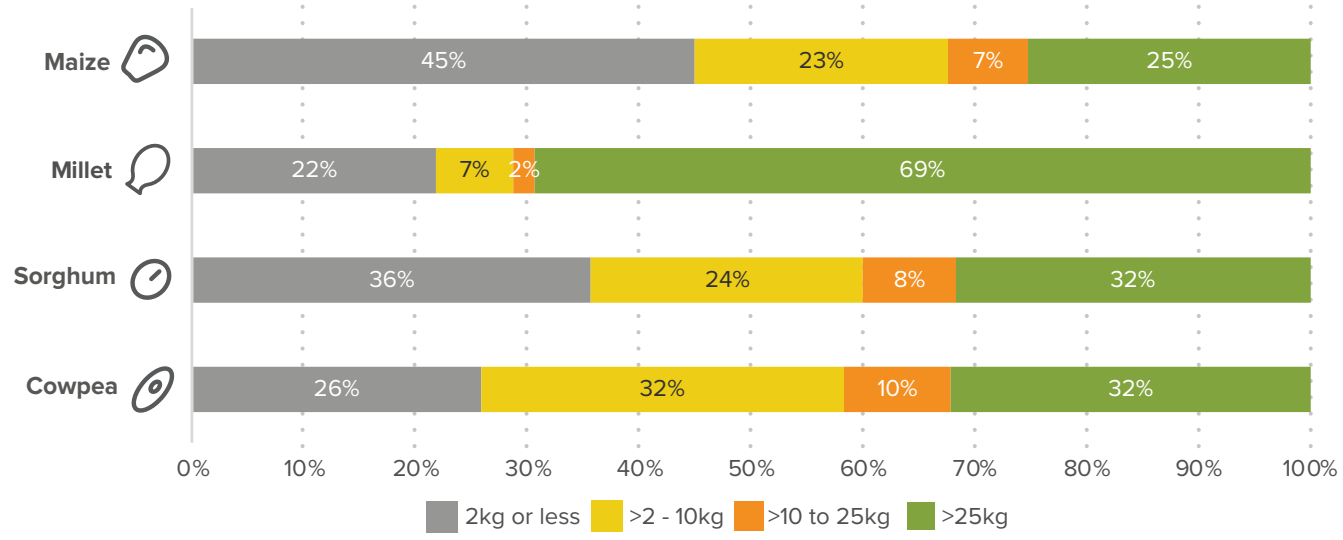
extremely poor | poor | fair | good | excellent

AVAILABILITY OF SEED IN SMALL PACKAGES

Because most farmers in Sub-Saharan Africa operate on a small scale, making seed available in small, more affordable packages is a good way to increase adoption rates of certified seed. TASAI tracks the percentage of seed sold in different package sizes, i.e., 2 kg and below, 2-10 kg, 10-25 kg, and above 25 kg.

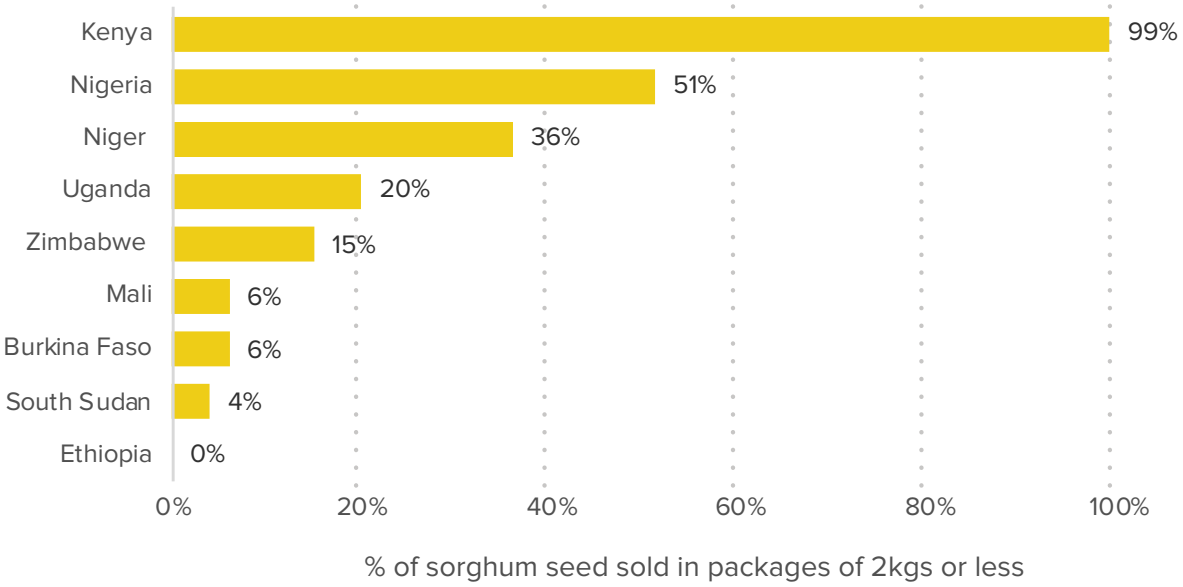
Figure 6 shows the percentage of different size seed packages sold by the companies surveyed. The share of seed sold in packages of 2 kg or less ranged from 22% to 45%, with the highest proportion recorded for maize, followed by sorghum, cowpea, and millet. Package sizes ranging from 2-10 kgs represented about a quarter to a third of purchases for maize, sorghum, and cowpea, but only 7% for millet. The share of package sizes of 10-25 kgs was no more than 10% for all four crops. Notably, the share of the largest package size measured (25 kgs or more) was 25% for maize, about a third for sorghum and cowpea, and over two-thirds for millet. The large package sizes for all crops generally indicate purchases by institutional buyers, such as the government, NGOs, and other projects, who usually buy seed in 50 kg bags.

Figure 6: Percentage of seed sold in different package sizes (2021)



To offer a comparative perspective, Figure 7 shows the percentage of sorghum seed – sorghum being a crop grown more widely in Africa than maize or rice - sold in package sizes of 2 kg or less in countries studied by TASAI between 2020 and 2022. With 36% of sorghum seed sold in small packages, Niger ranks third after Kenya and Nigeria.

Figure 7: Percentage of sorghum seed sold in packages of 2kg or less in countries surveyed by TASAI between 2020 and 2022



SEED AND GRAIN PRICES

Seed and grain prices at the time of planting are a good measure of the affordability of improved seed. These data points are important, as many smallholder farmers end up making a choice between purchasing seed from the formal sector or planting grain. The greater the price difference between the two, the less likely that resource-poor farmers will purchase certified seed. This indicator tracks the retail price of seed (at the agro-dealer level) vis-à-vis the market price of grain at the time of planting.

Our data shows that the price difference between OPV maize, millet, sorghum, and cowpea seeds and grains was significant and ranged from 183 to 272% (Table 20). This suggests that, when faced with the choice of buying seed vs. grain, resource-poor farmers may not be able to afford seeds – even OPV varieties. Between OPV and hybrid maize, the difference is slightly double for the hybrid variety. This is not surprising, as the cost of producing hybrid maize seed is higher. Nevertheless, it is safe to assume that, at a price that is nearly 2.5 times that of grain, hybrid maize is out of reach for many smallholder farmers in Niger.

Table 20: Seed and grain prices (2021)

Crop	Average seed price (US$/kg)	Average seed price (CFA/kg)	Average grain price (CFA/kg)
Maize (hybrid)	3.00	2,000	303
Maize (OPV)	1.23	823	303
Millet	0.88	585	319
Sorghum	1.17	783	288
Cowpea	1.93	1,290	589

CONCLUSION

The formal seed system in Niger is in the emerging growth stage of development (Ariga et al., 2019). Research and variety development are fully dependent on public sector institutions. NGOs and government managed development projects are the key buyers and distributors of improved seed. In a "catch-22" situation, seed producers do not target farmers directly, because the demand by farmers for quality seed is low; at the same time, the low demand by farmers is not sufficient to stimulate the growth of the private sector. Besides the outsized influence of the institutional market, the government's top-down perception of seed delivery contributes to depressed seed demand at the farm level. Many seed companies also lack adequate business management skills to run successful seed businesses. For its part, the government has developed the relevant legal and regulatory instruments; however, the capacity and funding to effectively provide the services outlined in these instruments remains inadequate. The agro-dealer network is underdeveloped.

Under the **research and development** category, the study found that the breeding programs for the four focus crops each have at least one active breeder, although interviews with breeders at the national research institution INRAN revealed inadequate funding for research and breeding infrastructure, such as fields with irrigation facilities and greenhouses. One important positive development is that a significant percentage of the newly released varieties have one or more climate-smart, nutrition-enhanced, or industry-demanded features. Out of the 16 varieties released in 2023, all seven cowpea varieties and two of the seven maize varieties had climate-smart features. In addition, two maize varieties had fast-cooking and nutrition-enhanced features, while one variety had industry-demanded features. However, the uptake of improved seed remains low, and most farmers continue to rely on seed from the informal sector.

Under the **industry competitiveness category**, our study found that the country has over 191 registered seed producers (the range for the other crops was 17 to 153), of which 18 are seed companies and the rest are mostly small individual seed producers. Millet seed and cowpea seed account for more than 90% of the production volume of the four focus crops. Due to the large number of seed producers operating in Niger, no single seed producer or group of producers dominates any of the four seed markets. Institutions, such as the government through its subsidy program and NGOs are the important buyers of seed, which they distribute to farmers. In addition, seed producers often source seed from other producers to meet supply contracts with these institutions. In contrast, buyers such as agro-dealers and farmers only account for between 15% (millet) and 35% (cowpea) of seed sales. The seed industry in Niger is predominantly local, as evidenced by the fact that there was only one reported import transaction of cowpea seed and no reported seed exports in 2022.

Niger's **seed policy and regulatory framework** are in place and are aligned with the ECOWAS seed regulations. All relevant public services, research institutions, and other regulatory bodies relevant to the seed sector exist. The main challenge the country faces is the inadequate implementation of the seed regulations and *Arrêté*. For example, though the variety release procedures are clearly defined in the national seed policy, the process is not consistently implemented due to inadequate funding. Furthermore, the costs of releasing a variety are yet to be set. The government seed subsidy program is still a large player in the seed market, distributing free certified seed to farmers. The program has challenges in the openness and transparency of seed procurement, predictability of the seed procurement process and efficiency of payments. In addition, due to inadequate oversight, the seed supplied through this program is often sub-standard.

Under **institutional support** for the seed sector in Niger, a dynamic private seed association, the APPSN, is operational and advocates for a stable and competitive seed system. Despite the DCCS having 61 public inspectors, they lack the resources they need to carry out their tasks, and as a result many seed fields are not inspected during the production season.

Agricultural extension services and agro-dealer distribution networks are two key **services to small-scale farmers**. Niger does not have enough public agricultural extension officers. Many development projects include extension services; however, these are often temporary and hard to track, and thus their impact is difficult to gauge. Currently the government supports collaboration between public, private, and non-governmental providers of agricultural extension services. The earlier model of the more community-centered BICs is being replaced with the new concept of agro-dealer distribution; however, there are few registered agents at present.

With respect to seed sales in small packages, the study found that the share of different package sizes for seed sales were fairly evenly distributed, with the exception of millet, where the largest package size dominated, a sign that the main buyers are institutions who purchase in large quantities. Given that most farmers access seed from NGOs and development agencies or the informal sector, the indicator on small package sizes has limited relevance to Niger's seed sector today. As the private sector continues to develop, this indicator will likely grow in importance.

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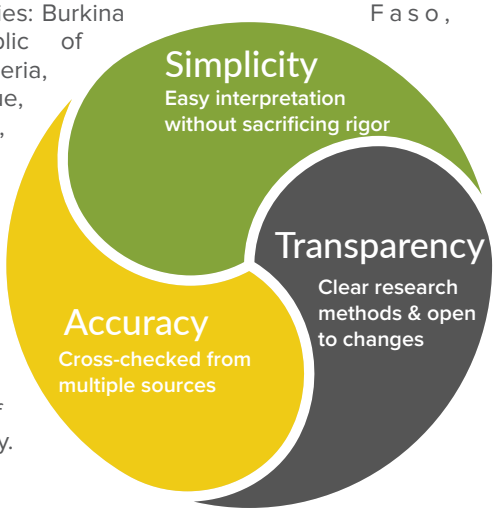
ABOUT TASAI

PILLARS OF COMPETITIVE SEED SECTORS

The African Seed Access Index (TASAI) is a seed industry research initiative that is coordinated by the nonprofit organization TASAI Inc. TASAI's goal is to encourage African governments and other seed industry players to create and maintain enabling environments that will accelerate the development of a vibrant private sector-led seed system serving smallholder farmers. It is this enabling environment that TASAI seeks to measure, track, and compare across African countries. The intended outcome of the index is improved access to locally adapted, affordable, and high-quality seed of improved varieties by smallholder farmers in Sub-Saharan Africa.

To assess the status of the seed industry value chain, TASAI tracks indicators in the following five categories: Research and Development, Industry Competitiveness, Policy and Regulations, Institutional Support and Service to Smallholder Farmers. By the end of 2022, TASAI studies will have been completed in 22 African countries: Burkina Faso, Burundi, the Democratic Republic of Congo, Ethiopia, Ghana, Kenya, Liberia, Madagascar, Malawi, Mali, Mozambique, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, South Africa, South Sudan, Tanzania, Uganda, Zambia, and Zimbabwe. In each country, TASAI works closely with local seed industry actors, government and international development agencies to share the TASAI findings and to identify the next steps for creating a vibrant national seed sector. TASAI's approach is guided by the principles of Simplicity, Transparency, and Accuracy.



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info@tasai.org

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