

# Senegal Farmer Networks Respond to COVID-19

Annah Latané, Jean-Michel Voisard, and  
Alice Olive Brower



RTI Press publication RR-0045-2106

RTI International is an independent, nonprofit research organization dedicated to improving the human condition. The RTI Press mission is to disseminate information about RTI research, analytic tools, and technical expertise to a national and international audience. RTI Press publications are peer-reviewed by at least two independent substantive experts and one or more Press editors.

### Suggested Citation

Latané, A., Voisard, J.-M., and Brower, A. O. (2021). *Senegal Farmer Networks Respond to COVID-19*. RTI Press Publication No. RR-0045-2106. Research Triangle Park, NC: RTI Press. <https://doi.org/10.3768/rtipress.2021.rr.0045.2106>

Cover Photo: Xaume Olleros for RTI International

This publication is part of the  
RTI Press Research Report series.

RTI International  
3040 East Cornwallis Road  
PO Box 12194  
Research Triangle Park, NC  
27709-2194 USA

Tel: +1.919.541.6000  
E-mail: [rtipress@rti.org](mailto:rtipress@rti.org)  
Website: [www.rti.org](http://www.rti.org)

©2021 RTI International. RTI International is a trade name of Research Triangle Institute. RTI and the RTI logo are U.S. registered trademarks of Research Triangle Institute.



This work is distributed under the terms of a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 license (CC BY-NC-ND), a copy of which is available at <https://creativecommons.org/licenses/by-nc-nd/4.0/legalcode>

<https://doi.org/10.3768/rtipress.2021.rr.0045.2106>

[www.rti.org/rtipress](http://www.rti.org/rtipress)

## Contents

About the Authors	i
Acknowledgments	ii
<b>Abstract</b>	ii
<b>Background</b>	1
<b>Methods</b>	3
<b>Results</b>	4
Household Survey Results	4
Farmer Organization Focus Groups and Interview Results	10
<b>Conclusion</b>	13
<b>References</b>	14
<b>Resources for More Information</b>	15
<b>Appendix 1. Communes Covered by the Farmer Networks Monitoring the Impacts of COVID-19 on Agricultural Production</b>	16
<b>Appendix 2. COVID-19 Action Questionnaire</b>	17
<b>Appendix 3. Senegal COVID-19 Safety Protocols for Data Collection</b>	21
<b>Appendix 4. Pre-Data Collection Focus Group Discussion Guide (in French and English)</b>	23
<b>Appendix 5. Video Interview Questions</b>	24

### About the Authors

**Annah Latané**, MS in Applied Economics, is a research food security and agriculture specialist in the Food Security & Agriculture division, RTI International, Research Triangle Park, NC, USA.

**Jean-Michel Voisard**, BS in Commerce, is director of market systems in the Food Security & Agriculture division, RTI International, Washington, DC, USA.

**Alice Olive Brower**, BA in Economics, is an economist in the Center for Applied Economics and Strategy, RTI International, Research Triangle Park, NC, USA.

### RTI Press Associate Editor

Jeremiah Ngondi

## Acknowledgments

The authors thank Oumar Diop and the team at STATINFO for their coordination, programming, and analysis work, without which this study would not have succeeded. Ibrahima Lo facilitated and coordinated with network leaders, drawing on his long-standing experience and relationships working with them under the Naatal Mbay program. Our thanks go to the farmer network leaders Bassirou Coly (Entente de Diouloulou), Elhadji Babou Diané (Saxemi de Kahi), Nimna Dayte (Fédération des Producteurs de Maïs du Saloum [FEPROMAS]), and Anna Gaye (Kissal Patim) for graciously joining this learning study in the middle of a pandemic and providing their invaluable insights. Thanks to RTI for sponsoring this study through internal research and development funds.

## Abstract

This study leveraged existing data infrastructure and relationships from the Feed the Future Senegal Naatal Mbay (“flourishing agriculture”) project, funded by the US Agency for International Development (USAID) and implemented by RTI International from 2015 to 2019. The research informed and empowered farmer organizations to track and respond to rural households in 2020 as they faced the COVID-19 pandemic. Farmer organizations, with support from RTI and local ICT firm STATINFO, administered a survey to a sample of 800 agricultural households that are members of four former Naatal Mbay–supported farmer organizations in two rounds in August and October 2020. Focus group discussions were conducted with network leadership pre- and post–data collection to contextualize the experience of the COVID-19 shock and to validate findings. The results showed that farmers were already reacting to the effects of low rainfall during the 2019 growing season and that COVID-19 compounded the shock through disrupted communications and interregional travel bans, creating food shortages and pressure to divert seed stocks for food. Food insecurity effects, measured through the Household Food Insecurity Access Scale and cereals stocks, were found to be greater for households in the Casamance region than in the Kaolack and Kaffrine regions. The findings also indicate that farmer networks deployed a coordinated response comprising food aid and access to personal protective equipment, distribution of short-cycle legumes and grains (e.g., cowpea, maize) and vegetable seeds, protection measures for cereals seeds, and financial innovations with banks. However, food stocks were expected to recover as harvesting began in October 2020, and the networks were planning to accelerate seed multiplication, diversify crops beyond cereals, improve communication across the network, and mainstream access to financial instruments in the 2021 growing season. The research indicated that the previous USAID-funded project had likely contributed to the networks’ COVID-19 resilience capacities by building social capital and fostering the new use of tools and technologies over the years it operated.

## Background

The state of emergency declared by the Government of Senegal on March 24, 2020, as a result of the COVID-19 pandemic meant that the approximately 70 percent of Senegalese who depend on agriculture for their livelihoods faced an economic shock with new uncertainties. Supply of important seeds, fertilizers, and labor and mechanization services; access to markets to sell their production; and ability to reimburse loans in the coming months were all in question. The upcoming 2020 rainy production season (approximately May to October) was in danger, with the risk of a major food crisis rising. As described by Moynihan & Letterman, emergency surveys attempted to capture the impacts of the COVID-19 virus on rural populations but experienced major difficulties because of low literacy, connectivity, and mistrust (Moynihan & Letterman, 2020). This lack of information hampered government authorities' capacity to target their response and development organizations' ability to pivot their programs to respond to the pandemic (Le Nestour & Moscoviz, 2020).

Community-embedded, information-based farmer networks can be readily leveraged to track the impact of economic, climate, or biological shocks, such as COVID-19, on rural communities. As noted in the US Agency for International Development's (USAID's) guidance on monitoring during the pandemic period operating environment, "the lessons learned from the response to Ebola in West Africa in 2013 suggest that platforms that are already in place, in use, and trusted by local stakeholders are more effective for collecting data" (USAID/Tanzania, personal communication to implementing partners, May 20, 2020). Agricultural development projects are often called upon to develop data collection systems that monitor agricultural production and farming household status in rural communities. If development practitioners act with the goal of self-reliance—by strengthening local digital technology service providers, equipping field agents to collect and manage data, and facilitating farmer-led learning forums—these system actors can be integrated to form "soft" infrastructure that can be leveraged for other purposes and that will sustain market-

level resilience, such as monitoring the COVID-19 response.

### Farmer Networks Explained

Farmer networks are groups of farmers that form larger organizations to provide members with services that enhance their productivity and provide access to financing and marketing. The networks take various legal forms depending on their size and autonomy as a business entity: cooperatives, associations, or Economic Interest Groups (a small-scale business registration status common in Senegal). Many of these organizations are the legacy of prior development projects. With FEPROMAS, Feed the Future promoted these organizations to their membership base as full partners in the delivery of value-added services rather than channeling services through lead firms or other third-party aggregation systems. Today, the greater part of the 123 such networks are recognized as strong partners in pursuing service delivery to their membership, and they interact with private partners, banks and local/national bodies.

Through the former Feed the Future Naatal Mbay project in Senegal, RTI International (Initiative Prospective Agricole et Rurale [IPAR] & RTI International, 2019a, 2019b) developed a data-oriented ecosystem to reach up to 155,000 rural households through 123 farmer networks in the most disadvantaged regions in Senegal with timely, accurate, and farmer-owned information and analytical tools for decision making. RTI and Dimagi, a software provider, trained locally based field agents who became adept using the open-source CommAgri platform (which is based on the Dimagi CommCare open-source platform) to collect data directly from farmers. Farmer organizations also built their data literacy with Naatal Mbay support. They began incrementally by using simple data dashboards for adaptive seasonal management and by attending inclusive evidence-based learning forums. Ultimately, they were able to negotiate contracts with input providers, buyers, financial institutions, and insurance providers and to advocate for policy change. Throughout, the program relied on three pillars for rigorous remote data collection: (1) trusted relationships; (2) a culture of evidence-based decision making; and (3) the inputs of another local partner, STATINFO, using the CommAgri tool. These three strengths underlay the soft data infrastructure

linking farmer networks and their field agents with membership households.

USAID defines resilience as the ability of people, households, communities, countries, and systems to mitigate, adapt to, and recover from shocks and stresses in a manner that reduces chronic vulnerability and facilitates inclusive growth (Feed the Future, 2017). Vaughn (2018) defines resilience capacities as the potential for proactive measures to be taken to manage the impacts of shocks and stresses, or the sources of resilience that enable protected or improved well-being outcomes. Resilience capacities may be absorptive (i.e., minimizing exposure through preventative measures and coping strategies to avoid permanent, negative impacts); adaptive (i.e., making informed choices and changes in livelihood strategies in response to longer term trends); or transformative (i.e., relating to governance and social protection mechanisms that affect the enabling environment). Resilience capacities can also be considered at different, though overlapping, levels: individual, household, community, regional, and national. For example, savings, credit, and assets may be a household-level resilience capacity whereas market information, agricultural practices, or business skills may be considered community-level capacities. At the community level, social capital is the concept of codes, norms, trust, and perceptions of embeddedness that exist between individuals and community groups, such as farmer organizations. Bonding social capital (bonds between community members), bridging social capital (bonds between communities), and linking social capital (networks between individuals or groups across formal or institutional boundaries) may interact with other resilience capacities in ways that amplify or downplay their effects in mitigating shocks and stresses (Vaughn, 2018). All three types may exist simultaneously in a community (Bernier & Meizen-Dick, 2014). Although the Naatal Mbay project was conducted with an economic growth approach, we hypothesize that relationships built through farmer networks may lead to community resilience capacities that have positive benefits on their members' ability to withstand the shock of COVID-19.

The purpose of this RTI-sponsored study was twofold. The first area of interest was to learn more about the food security status of rural households, their coping strategies, and the ways in which farmer networks responded to the constraints posed by COVID-19. The second was to test whether the network-embedded data collection infrastructure could be mobilized for research purposes outside the context of an international development project. Our research questions asked about the following:

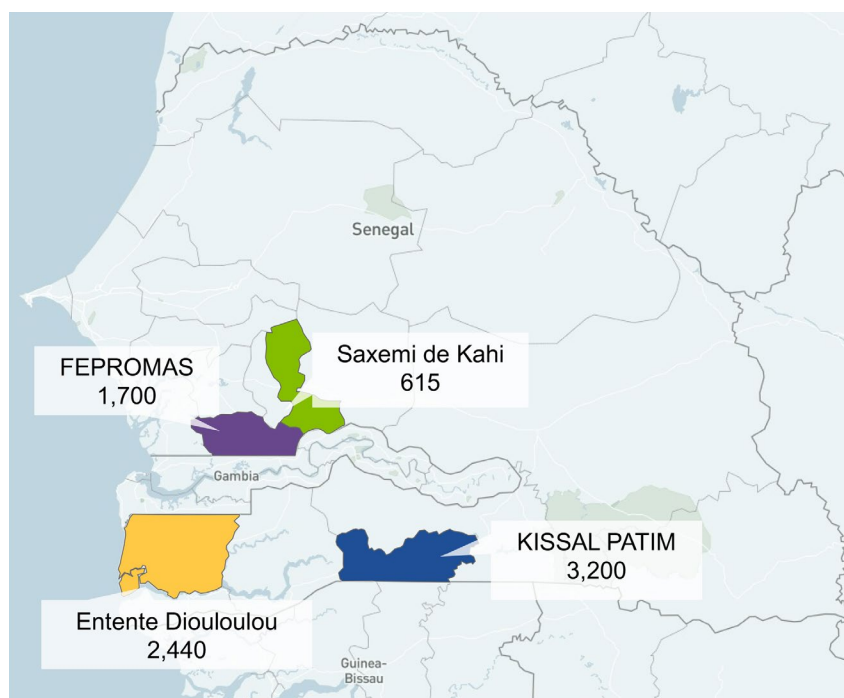
- **Shortages of inputs:** Do farmers expect to see shortfalls in critical inputs (seeds, fertilizers, labor) for the 2020 season's production as a result of COVID-19? Have farmers already experienced such shortfalls? If yes, what strategies did they take to mitigate them? Do they see differences in yields at the end of the current season as compared with last season?
- **Allocating resources in the household:** What is the current status of the household's cereal stocks? Do they consider themselves in a good position to face less access to foods? Have households changed their food consumption or expenditure patterns for critical items such as food, medical care, or school fees?
- **Farmer organization response:** Does membership in a farmer organization help form part of households' coping strategies? For example, are households drawing on social capital, transferring resources or receiving resources, or receiving psychosocial support as a result of their membership?

The results of this study will also form the foundation of a panel dataset that farmer networks can use to orient their response strategies and future planning. Networks, development implementers, and researchers could also use the same dataset after COVID-19 for in-depth research with the same communities to determine whether particular coping strategies resulted in better food security or higher income from agricultural sales.

## Methods

We identified four farmer networks that agreed to participate in our action learning study. Fédération des Producteurs de Maïs du Saloum (FEPROMAS) and Saxemi de Kahi are located in the Kaolack and Kafrine regions, respectively, north of The Gambia, and Entente Diouloulou and Kissal Patim in the Ziguinchor and Kolda regions of the Casamance zone (Figure 1). All of these areas are part of the Feed the Future Zone of Influence covering approximately 8,000 rural households working in the maize, millet, and rice value chains in 20 communes (municipalities; see Appendix 1). These networks were purposely sampled because they exhibited strong capacity and autonomy under Naatal Mbay, and much of their data infrastructure remained active, with regular agronomic monitoring of their members and data analysis to manage their cereal crops, finance, insurance, and sales, despite Naatal Mbay's closeout in 2019. The farmer organizations signed data sharing agreements with STATINFO as part of the study, and all participants gave their individual consent following the exemption determination of RTI's Institutional Review Board.

**Figure 1. Farmer network locations and their membership numbers**



Working with STATINFO, we repurposed another Naatal Mbay asset, the CommAgri data collection platform. Although all four networks had previously used CommAgri during Naatal Mbay, they reverted to Excel-based data collection after closeout because of the subscription fees. With the launch of this study, they were able to re-enter the CommAgri system and access new research forms. Field agents employed by the networks collected the standard sequence of data during the production season, following planting, application of best practices, and harvest. In addition, they administered a COVID-19 action survey form to assess household demographics, assets, food security status, COVID-19 constraints, and coping strategies (see Appendix 2 for a dual-language version of the questionnaire, which was administered in French).

The trusted field relationships among the network leaders, existing field agents, database managers, and our team—including STATINFO—were a critical aspect of our methods. The networks sampled 10% of their membership using stratified random sampling, a technique they learned under Naatal Mbay. Strata included geography, gender, and type of producer (satellite producer or leader producer). The field

agents were already based in the communities in which they were working, which mitigated the need for travel and thereby prevented delays caused by COVID-19 travel bans within Senegal. STATINFO conducted virtual training sessions via Zoom with the field agents and monitored them remotely each day during data collection using data dashboards and WhatsApp. STATINFO also trained the agents on COVID-19 safety protocols (see the textbox on Collecting Data during COVID-19 and Appendix 3), and the networks purchased masks and hand sanitizers for agents to have on hand and distribute during data collection. Finally, before data collection, we conducted several virtual Zoom sessions with the network leaders, including focus groups and recorded interviews, to

### Collecting Data During COVID-19

Together with STATINFO, we developed COVID-19 safety protocols designed to minimize infection risk among study participants, field agents, and farmer organization leadership. Protocols included the following:

- Households were asked to report incidences of COVID-19 symptoms or confirmed illness in their households during interview scheduling and before visits; if the household reported incidences of illness, field agents did not conduct field visits until 14 days after the incidence was reported or until after the symptoms of the household member dissipated, whichever was longer.
- On the days of scheduled field visits, STATINFO conducted a phone-based screening for COVID-19 symptoms with field agents, including dry cough, fever, other respiratory symptoms, or loss of taste or smell. If field agents reported any symptoms, they did not proceed with their field visits for 14 days or until their symptoms were gone, whichever was longer.
- Field agents were selected according to their proximity to sampled households to minimize the transport needed. No public transportation was used to reach households.
- Field agents were provided face coverings and hand sanitizer for themselves and the farming household representatives with which they interacted. The Government of Senegal required all persons to wear face coverings while in public, including in taxis, at markets, and in private vehicles during data collection. Field agents remained a minimum of 2 meters from farmers and anyone else present during their field visits. Field agents were required to wear their face coverings properly and use hand sanitizer before beginning their visit and after completing their visit. Farmers were instructed to do the same, and all were advised to wash their hands immediately upon arriving at a facility that had handwashing capabilities.
- If a field agent observed that a participant appeared to have coughing, fever, or other signs of illness, they did not proceed with the data collection and rescheduled for 14 days later or after the household reports symptoms were gone, whichever was longer.
- Farmer leaders who conducted Zoom focus group discussion calls were expected to wear masks when in close proximity to others, wash hands frequently, and maintain social distance when possible.

understand what their COVID-19 response strategies had been (see Appendices 4 and 5). After the agents collected the questionnaire data from the selected sample of members and we analyzed the findings, we organized debriefings with the network leaders to share the results.

The agents collected survey data from the same households in Round 1 (August 2020) and Round 2 (October 2020; see Table 1). The target respondents were heads of households. Although the field agents gathered much of the agronomic data in person, they followed up by phone to obtain most of the COVID-19 action data. Data were cleaned, and descriptive statistics were generated using Stata/MP and Tableau.

**Table 1. Sample sizes, by network**

Network	Number of members interviewed, by round	
	Round 1 – August	Round 2 – October
Saxemi de Kahi	114	113
FEPROMAS	263	254
Entente Diouloulou	249	245
Kissal Patim	256	256
<b>Total</b>	<b>882</b>	<b>868</b>

FEPROMAS = Fédération des Producteurs de Mais du Saloum.

## Results

### Household Survey Results

Snapshots of household survey results from both rounds are presented in Figure 2 and Figure 3. Although all data are available disaggregated by gender, age, and commune, we present the figures as disaggregated by farmer network for comparison purposes. Data not disaggregated by round (August or October) were collected only once, during the first round. Results by network are presented based on their location, from north to south: Saxemi and FEPROMAS north of The Gambia, then Entente and Kissal south of The Gambia in the Casamance zone. Descriptions of each farmer network and their coping strategies are in the Farmer Networks textbox.

### Demographics

In terms of demographics, 71 percent of respondents identified as male and 29 percent as female. Most respondents fell into the 35–55 age range. The average household size—13 people—was higher than the 2013 household sizes available from the Agence Nationale de la Statistique et de la Démographie [Sénégal]



## Farmer Networks

**FEPROMAS.** Established in 2012, FEPROMAS brings together farmer groups of the Saloum ecological zone. The cooperative aggregates input orders, bank credit, crop insurance, tractor and harvest services, and crop marketing for its 1,700 members. Upon the declaration of the regional lockdown because of COVID-19, FEPROMAS reacted urgently to protect the 2020 season's production. Input planning was fast tracked: input and seed suppliers, banks, and insurance providers were contacted by phone to secure contracts for timely delivery despite the roadblocks. FEPROMAS leadership brokered loan repayment plans with La Banque Agricole for balances outstanding at the time of lockdown by issuing promissory notes. This secured the release of 2020 season's input credit valued at more than \$200,000. Placing seed orders early also allowed hybrid maize importers to place reservations with their sources, and FEPROMAS's own seed multiplication of open pollinated varieties covered the rest of their seed needs. In parallel, 1,500 masks and cleaning agents were distributed, prioritizing PPE for lead farmers who sensitized membership on safety measures. Rather than speculate on the market, part of FEPROMAS's maize stockpile was reserved to complement food aid to support internal food needs.

**SAXEMI.** A 615-member millet farmer group that trades with cereal processors, Saxemi is located in the Kaffrine department. Most of Saxemi's inputs are funded through its \$90,000 internal savings fund, which had 25% still outstanding in loans when the COVID-19 lockdown went into effect. Saxemi leadership promptly accelerated collection to minimize outstanding loans and called on the bank for emergency funding to compensate, enabling them to place input orders on time and at a fair price for its members. The network's internal seed multiplication program allowed members to access quality seeds, helping maintain high yields but also opening an avenue for the network to sell on the open market. Despite surging prices, Saxemi respected its commitments to local processors and allowed producers to re-purchase remaining surpluses because local cereal supplies were dwindling. The leadership team contributed to local community support and ensured that part of the PPE and cleaning agents available from the government were allocated to its 48 lead farmers and community members.

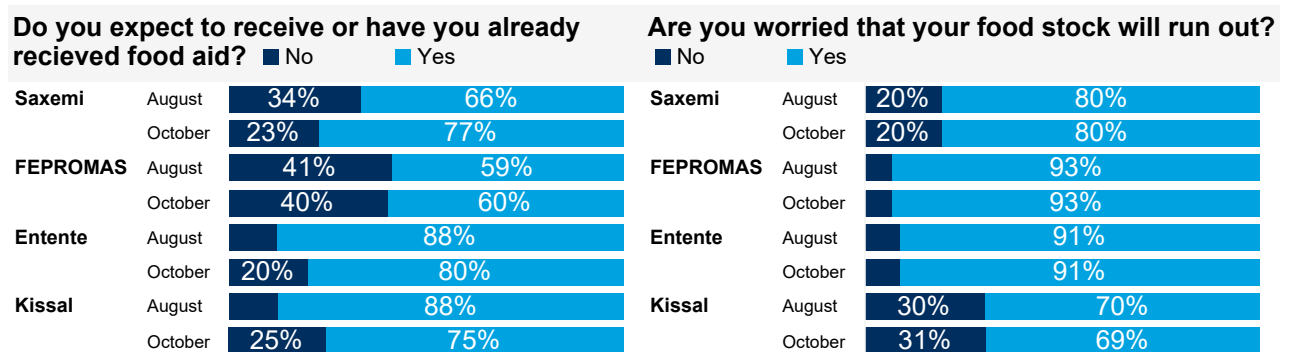
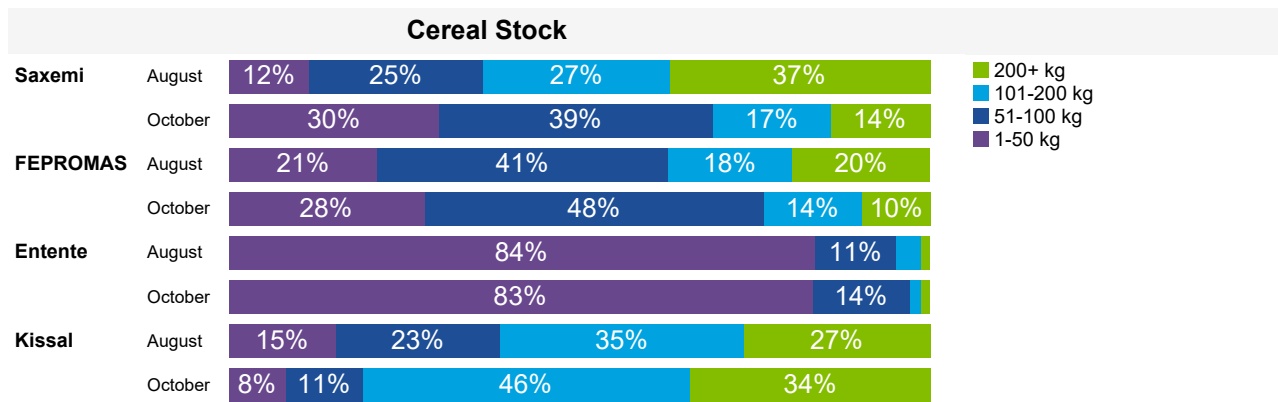
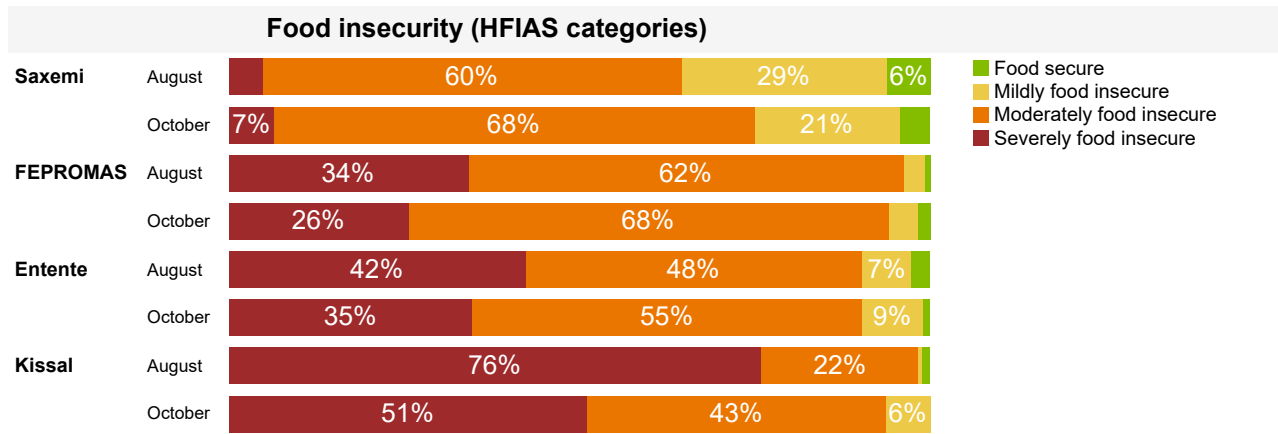
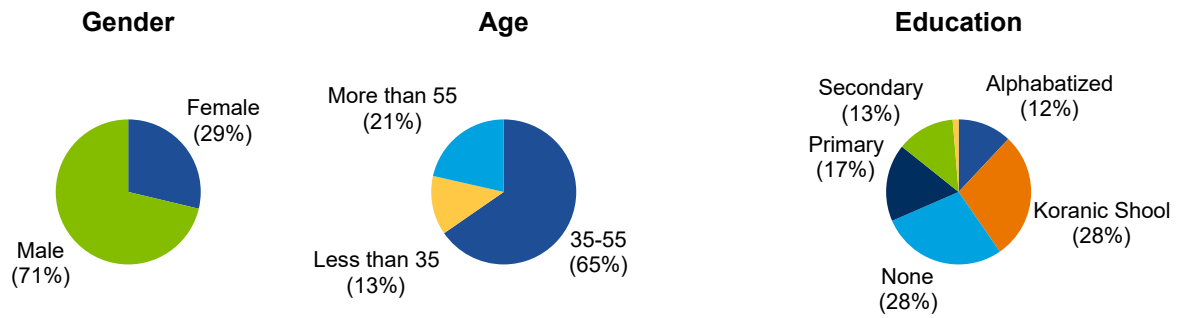
**KISSAL PATIM.** From a self-help group of 500 farmers in the Kolda region of Casamance, Kissal Patim has diversified from a home gardening initiative to support rice and maize production, and the organization now numbers more than 3,200 members. Its seed multiplication program and input procurement service provided Kissal Patim with networks through which to channel emergency support to its membership. Kissal Patim leaders leveraged their contacts with local authorities and non-governmental organizations to ensure their full membership accessed emergency food aid and PPE. By resorting to radio messaging to convey extension services and personal safety messaging, the network compensated for lost mobility and access to members; it also maintained its subscription to a real-time weather alert and rainfall tracking service for members. Kissal Patim complemented input supplies with emergency grants distributed to farmers with the expectation of reimbursement upon harvest. Finally, the network obtained supplies of short-cycle crops such as cowpea, sorghum, and vegetables to help members face the lean period before harvest.

**ENTENTE DE DIOULOULOU.** This organization plays an important role in keeping its membership of 2,400 farming household supplied with quality rice seeds, relying on revolving funds accumulated from various support programs. The COVID-19 lockdown severely impeded communications in the network's catchment zone of Bignona, so leadership relied on its decentralized extension network to cover most of the members and to coordinate timely input procurement. The COVID-19 lockdown also impacted loan collection from the prior season, forcing Entente to reduce their annual lending by 40% for the 2020 season. Leadership took measures to protect the network's seed bank and kept producers from buying back the 2019 seed harvest; however, it created an emergency stock for disadvantaged farmers. Like Kissal Patim, Entente leveraged its networks to access and distribute emergency food aid, fertilizer, and short-cycle crop seeds to its membership.

(2016) for the same regions (Kaffrine = 10, Kaolack = 10, Kolda = 9, Ziguinchor = 7), reflecting the presence of additional family members who had been restricted from or had chosen not to return to urban areas. In terms of education level, the majority of respondents either had attended some Koranic school or had no education at all. However, 30 percent of respondents had received some schooling, and of those, an average of 13 percent of respondents had reached a secondary (high school) level. Of those

aged 35 years or less 23% had achieved a secondary education, compared with 14 percent of the 35–55 age group and just 5 percent of the 55+ group; similarly, 27 percent of the under-35 group had a primary education, compared with 16 percent in each of the other two groups. According to the sample, growing proportions of younger generations were accessing and achieving higher education levels, an encouraging sign of new levels of digital literacy to come.

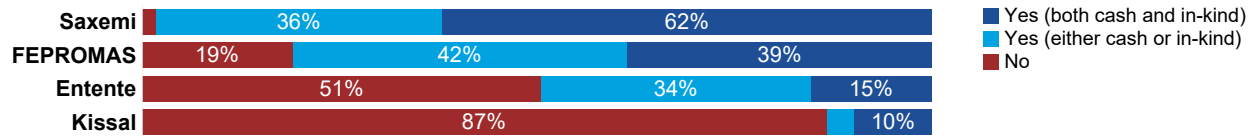
Figure 2. Household survey results, part 1



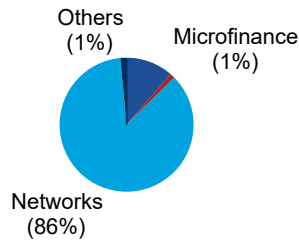
FEPROMAS = Fédération des Producteurs de Maïs du Saloum.

**Figure 3. Household survey results, part 2**

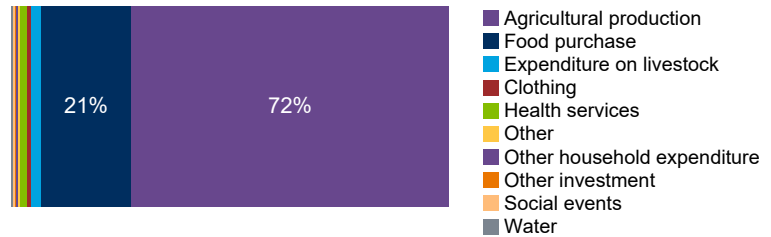
**Has your household borrowed credit in cash or in-kind in recent years?**



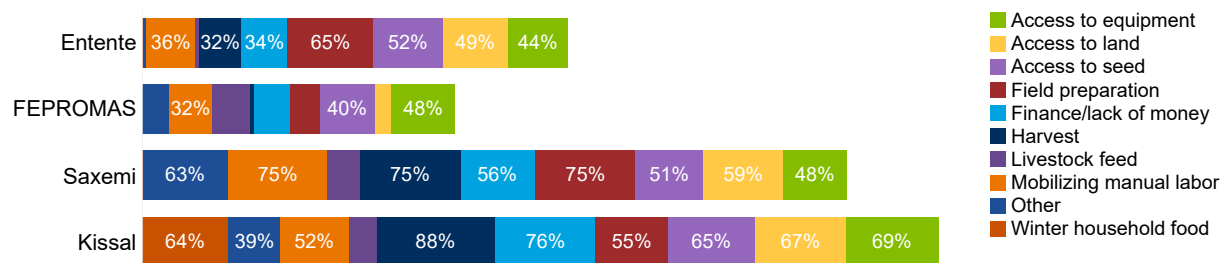
**What was the source of your credit?**



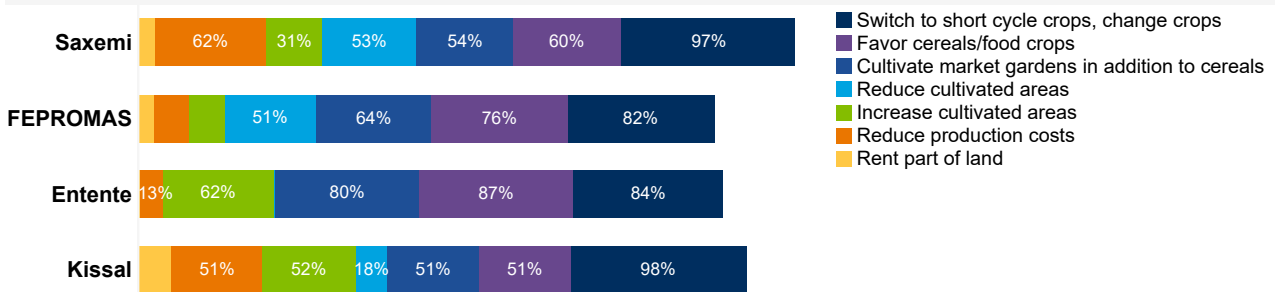
**What was the main use of your credit?**



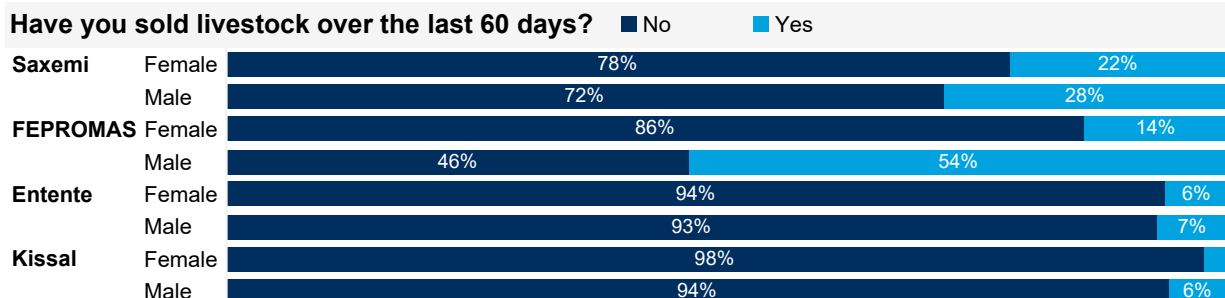
**What challenges have you faced preparing for the growing season 2020/2021?**



**How have you changed your cultivation habits to respond to COVID-19?**



**Have you sold livestock over the last 60 days?**



FEPROMAS = Fédération des Producteurs de Maïs du Saloum.

## Food Security

Food security was a major focus on the COVID-19 action questionnaire, which we approached using three types of questions: food insecurity status, cereals stocks in the household, and expectation of receiving food aid (see graphs in Figure 1). We used the Household Food Insecurity Access Scale (HFIAS) to identify levels of food insecurity among respondent households (International Dietary Data Expansion [INDDEX] Project, 2018). The scale asks a series of nine questions about an event related to food security, with follow-ups related to frequency—for example, how often household members may have gone without a meal for a day over the past 30 days. Responses are tabulated and assigned a score ranging from 0 to 27, which is then converted into a food insecurity category ranging from food secure (green) to severely food insecure (red).

When comparing the HFIAS results by network and by round, on average, all the networks except Saxemi saw the percentage of their sampled membership decrease in the severely food insecure category. Kissal Patim had the largest share of severely insecure households in both rounds, but that share decreased between the two rounds as households entered the maize harvest season. A few explanations for the levels of food insecurity arose from our post-survey discussions with network leaders. Entente noted that the border closures caused by COVID-19 affected households' access to food; in addition, the lower-performing production season in 2019 meant there was less harvest available to store. The Kissal Patim manager expressed surprise that the percentage of severely food insecure households in Round 1 (76 percent) was not in fact higher due to the high level of vulnerability in her zone. However, with the harvest in her zone starting at the end of September and early October for green maize as well as for peanuts and rice, more households shifted into a moderate category of food security. Because the COVID-19 action survey instrument remained available on the network agents' devices, Kissal Patim manager decided to conduct a third round from December 2020 to January 2021 and expected to see the proportion of members in the severely food insecure decrease significantly.

Beyond the HFIAS, the amount of cereals that households had available for consumption provided a second data point to understand food security. As of 2017, cereals stock consumption per person in Senegal was, on average, approximately 8 kg/month (IPAR & RTI International, 2017). With an average of 13 members in sampled households, those with 100 kg or less in stock were likely to be especially concerned about running out of food in the coming months. As mentioned previously, the first round of data collection took place during the peak of the lean season, just before harvest; for some networks, the second round occurred after harvesting had begun.

We can see a few shifts in the household stocks between the rounds. Saxemi and FEPROMAS households experienced decreases in the amount of cereals in stocks, with more households shifting from the 101–200 kg and 200+ kg groups into less than 100 kg and less than 50 kg, because the harvest season had not yet begun for those networks. Kissal Patim, however, experienced both an increase in stocks between rounds and higher levels of cereals on hand; before data collection, many of their members had received food aid from the government. Without the food aid, the Kissal Patim network leader expected that their stocks would have been closer to the levels of Entente, which experienced small increases between rounds.

We also asked households about their expectations to receive food aid. The network leader discussions of the household responses illuminated several cultural dynamics. For example, the household data showed that during both rounds, most households expected to receive food aid in some form, although the numbers were slightly lower in Round 2 overall. Saxemi's leaders confirmed that 70 to 75 percent of their members had received about 100 kg worth of cereals for food aid as of Round 2. In the Entente network, any member who did not receive official aid from the national government received aid from local sources instead. Kissal Patim members had also received food aid, as noted previously. However, FEPROMAS detected a cultural norm of negative stigma attached with receiving food aid, which may explain the disconnect between the high proportion of members who were experiencing moderate food insecurity but who said they did not need any food

aid. By contrast, Kissal Patim's leaders indicated that even when the enumerators were network agents with trusted relationships, members would respond in the affirmative that they needed food aid if they thought that Kissal Patim might be investing in new programs, even when they had already received aid. For this reason, the networks saw HFIAS scores and the cereals stock responses as more important indicators of the food security status of their member households than the food aid questions.

### Access to Finance

Access to finance is a critical need for farmers and is one of the primary services that farmer networks provide to their members (Figure 3). The majority of households in Saxemi and FEPROMAS indicated that they had borrowed in the form of cash or in-kind credit in the past year, with most of that credit used to support agricultural production, followed by food purchases. As less financially connected networks, Entente and Kissal Patim had fewer members accessing finance; those in Entente who said they had accessed credit likely were using it for seed production. Most respondents who had received credit reported receiving it from the networks. During the follow-up sessions, the network leaders validated these results. They said that because the networks were playing a strong intermediary role for accessing finance, most of their members who borrowed did not perceive that the original source of the credit was the banks.

### COVID-19 Challenges and Responses

Households were asked to select constraints that they were experiencing or expected to experience as a result of COVID-19 (Figure 3). Across the board, most households indicated that field preparation and access to equipment were constraints, followed closely by access to seeds and finance. Most respondents did not indicate that household food stocks during the winter months would be a constraint, with the exception of members of Kissal Patim, which reflected the higher levels of vulnerability of households in the Casamance region, a post-conflict zone. Similar to the questions about access to finance, the constraints noted by the network members reflected the resource levels of the networks themselves. For example, FEPROMAS is well-resourced in terms of

maintaining connections with financial actors and assuring farmers' access to seed and equipment. In Casamance, Entente is better resourced than Kissal Patim; Kissal Patim is a newer network, and Entente benefits from access to development aid that is concentrated in the Ziguinchor conflict zone.

In response to the constraints, we also asked households to report their response strategies. Most households reported shifting their cropping strategy to short-cycle crops (such as cowpea and maize) and favoring cereals and food crops. Market gardens were another popular strategy, particularly with farmers in the Entente network. Kissal Patim's leaders noted that they were benefiting from engagement with the USAID-funded Feed the Future Kawolor Project as a reason that farmers were pushing into market gardens and horticulture crops; with the Kawolor Project's support, Kissal Patim staff made telephone calls and sent messages to farmers via rural radio stations to produce as much foodstuff as possible in preparation for a potential second wave of the pandemic, while paying attention to household nutrition in the process. The data also showed that some households reduced their area cultivated whereas other households increased their area cultivated. Farmers in Saxemi and FEPROMAS in the Saloum region were more likely to decrease their land area; those in Entente and Kissal Patim in the Casamance region were more likely to increase their area. Kissal Patim provided some additional context in terms of youth returning to the land from urban areas in a loose back-to-the-farm movement driven by COVID-19. They were reclaiming land they had formally rented out, choosing to go into horticulture and higher-value crops and providing agripreneurial services.

Finally, households were also asked about their livestock selling activities, with the hypothesis that households might have been choosing to sell livestock as a coping strategy to access more funds to purchase food. However, most households reported not selling livestock, with the exception of male respondents from FEPROMAS; network discussions provided context that fattening sheep is a common side business for men in the Saloum region and particularly where FEPROMAS is active, so when the travel ban was lifted, business picked up. Because this is a largely local and accessible market,

sales were likely less of a destocking response and more a resumption of regular business activity. In Casamance, networks indicated that it was quite uncommon to sell sheep or goats. Instead, farmers might “exchange up” to a cow or sell livestock only because of a major traumatic or celebratory life event. COVID-19 had not yet risen to the level of a serious event that would merit livestock sales.

### Farmer Organization Focus Groups and Interview Results

Through multiple discussions and focus groups, the four network leaders provided insights on how these organizations—which in recent years had built robust extension systems, market linkages, and financing mechanisms—had fared under the onslaught of COVID-19. The networks had to counter the inevitable regressions brought by the double shock of the previous year’s drought and

the pandemic lockdown. First, to mitigate systemic effects, they kept their governance structures intact as they coped with the initial humanitarian response. They then reinterpreted pre-pandemic value chain approaches and financial instruments to shore up their production programs and secure the 2020 harvest. Many of the insights shared by network leaders aligned well with the expected impacts of COVID-19 articulated in a paper by Arouna et al. (2020)—a research team from AfricaRice, the French Agricultural Research Centre for International Development, and the International Rice Research Institute—on the impact of COVID-19 on domestic rice value chains and food security in West Africa. Among the topics they explored were procurement of inputs, access to labor, and finance. Table 2 aligns the expected impacts from the AfricaRice research team with a summary of the many diverse response

**Table 2. Expected COVID impacts and farmer network responses**

Expected COVID-19 impact	Farmer network responses
Dealers face challenges in procuring inputs such as fertilizers and insecticides	<ul style="list-style-type: none"> <li>• Execute early pre-season contracts with dealers and banks to secure orders and to facilitate procurement by importers—for example, for imported hybrid maize seeds</li> <li>• Facilitate access to subsidized inputs by members</li> <li>• Coordinate last-mile distribution</li> </ul>
Farm households lack access to seed; farmers may consume their rice stocks, including seed	<ul style="list-style-type: none"> <li>• Make cereal seed production a core network activity</li> <li>• Distribute short-cycle crop seeds (e.g., cowpea, maize, horticulture crops) through both purchases and donor aid</li> <li>• Encourage early harvest of 2021 seed stocks and accelerated processing</li> <li>• Establish or increase emergency food stocks from harvest surplus and downgraded seed stocks</li> </ul>
Access to labor may be a challenge during lockdown	<ul style="list-style-type: none"> <li>• Coordinate mechanized services across the network using cellular and smartphones</li> </ul>
Technology transfer and access to improved practices may be a challenge because of lack of mobility of national extension services and non-governmental organizations	<ul style="list-style-type: none"> <li>• Distribute personal protective equipment to field agents as a priority</li> <li>• Coordinate procurement of inputs and seeds via mobile phone</li> <li>• Use radio messaging about best practices and personal safety</li> <li>• Continue subscriptions to SMS rainfall tracking and weather alert services</li> </ul>
Farmers’ financial constraints may be exacerbated	<ul style="list-style-type: none"> <li>• Fund emergency loans to farmers from network equity reserves</li> <li>• Issue promissory notes through the network, underwritten by banks, to cover unpaid balances to allow opening of 2020 lines of credit</li> </ul>
Farmers may not be allowed to go to market to sell their products	<ul style="list-style-type: none"> <li>• Secure supply for pre-season contracts with processors and dealers despite 2019 rain shortfall</li> </ul>
Farmers will lack alternative marketing strategies	<ul style="list-style-type: none"> <li>• Distribute seeds for diversification short-cycle crops and horticulture crops to be marketed locally</li> </ul>
Inability to sell crops in a timely manner may increase liquidity constraints and jeopardize food security	<ul style="list-style-type: none"> <li>• Negotiate a moratorium with banks on unpaid balances</li> <li>• Sell grain surpluses to members on credit</li> <li>• Link with food aid programs to ensure members’ equitable access</li> </ul>

strategies that farmer networks had devised and shared during our discussions.

### Humanitarian Responses Designed to Preserve Network Cohesion

Networks took the initiative to modify systems inherited from Feed the Future to protect their assets and to limit backsliding of development gains. As an example, Saxemi opted to reserve a portion of the 2019 harvest to respect key commercial contracts while freeing the limited remaining surpluses for internal network households, rather than speculating on the open market. This decision demonstrates a will to protect valuable established markets yet provide for the food security of more vulnerable members. In the same vein, Entente de Diouloulou took immediate measures to mill lower-grade seed stocks, which were then distributed as food to 1,000 households to assuage initial fears, while securing the seed program for the following year by accelerating the procurement of bagging supplies and planning for an early harvest. Kissal Patim made sure that members could access fertilizer subsidies for the 2020 season but distributed these inputs with the expectation that members would repay the network at the end of the season to rebuild internal capital for subsequent input lending.

### Maintain and Leverage Systemic Linkages

Farmer networks quickly took measures to preserve the integrity of the systemic linkages built during the Feed the Future programs. Even though the lockdown made planning for the 2020 season more difficult, the networks supplied their field agents and lead farmers with personal protective equipment (PPE) so that they could continue their work in person, and they used phone-based WhatsApp links to communicate remotely with their members as needed. Finally, they produced their annual input procurement plans using Excel-based templates. They took bold, transformative action to bridge communication and logistics barriers and to extend services to communities. This response contrasts with the prevailing expectation that farmers would rely on negative coping strategies (such as destocking livestock or consuming their seed stocks) to face the COVID-19 shock unless input firms, processors, buyers, and banks took the initiative.

Instead, the four farmer networks participating in this study bridged the last mile to their rural members and activated linkages with private firms, partners, and banks to renegotiate or adjust contracts and to keep value chains functioning despite COVID-19 barriers. That said, the networks did not achieve these results in a vacuum. Each network mentioned reaching out to institutional aid and development partner initiatives, such as the Feed the Future Kawolor Project, to channel coping resources and to fund future transformation plans that would benefit their members.

### Adapting Financial Instruments

The questionnaire responses highlighted the farmers' perception of the central role that the networks played in accessing seasonal credit. Networks adapted existing integrated credit mechanisms developed under Feed the Future to deal with the exceptional situation of COVID-19. Several of them co-designed financing mechanisms with local financial institutions or introduced their own. FEPROMAS, one of Feed the Future's early success stories, co-created a financial instrument with the Banque Agricole that relied on promissory notes to temporarily capitalize outstanding 2019 loan balances, which then allowed FEPROMAS members to access 2020 lines of credit. Saxemi and Entente resorted to allocating their internal capital reserves to cover outstanding balances and were able to extend credit for the upcoming season to their members accordingly. This ability to innovate and adapt in the face of adversity by relying on internal cohesive bonds and external trusted linkages demonstrates the powerful social capital these networks built through their successful value chain activities.

### Dependence on Labor Mobility and Skills

Challenges reported around access to labor were twofold. First, the closure of the Gambian and Guinea Bissau borders prevented laborers from migrating into Senegal's agricultural zone at the outset of the growing season. Second, the rescheduling of school exams because of lockdowns during the sowing season meant that students who typically would have been at home by then could not participate, increasing the cost of land preparation and activities

such as manual weeding. In Casamance, travel bans and roadblocks kept some villages from linking with network services. In-person extension trainings and technical assistance were not held as usual. Using less-skilled personnel likely impacted 2020 yields, and the increased demand for mechanized services pushed up costs, leading some farmers not to use them.

### Ensuring Inclusion, an Acknowledged Blind Spot

The household survey showed the vulnerability of the network membership. One issue was limited literacy, given that only 30 percent of members had attended elementary (17 percent) or secondary (13 percent) school. Also, with women comprising only 29 percent of network members and 13 percent aged younger than 35, we hypothesize that the benefits stemming from adult men's network memberships are not fully trickling down to women and youth in their households. Specific crop diversification measures promoting small-scale horticulture and home gardening were put in place with support from external projects that targeted women and youth specifically, which were well accepted. However, the network leaders recognized that the crisis highlighted the urgency to deliberately introduce income-diversification strategies within households and in the community, particularly for youth and women with limited access to land.

### Recognizing the Value of Extension and Advisory Services

The networks recognized the importance of maintaining extension services to ensure that their farmer members applied best practices. Prioritizing the supply of PPE to network agents facilitated their safe access to communities to plan and advise members during the 2020 season. Educated youth were prevented from returning to the fields because of the lockdown, which highlighted their role in oversight, sound practices, and service delivery—and is expected to impact yields negatively. The focus group results also demonstrated that, despite the pandemic, climate and short-term weather information was considered a priority value-added service for which network members demonstrated a willingness to pay, even during these difficult times. The questionnaire showed that more mature networks

such as FEPROMAS and Entente de Diouloulou were able to address the land preparation constraints by coordinating mechanization services within their zone to cover their members' needs.

### Shock Responses: A Data-Driven Process

The data-driven processes that the networks used to manage their responses were less visible to external observers. Networks were confident in the accuracy of their member listings, and they used procurement planning and forecasting tools. They managed these systems locally, resorting to trusted Excel-based templates and using the open-source CommAgri platform during this study to facilitate field tracking in addition to administering the household survey. The networks' ability to manage data made it possible for Kissal Patim to ensure that the food aid allocations were sufficient to meet the needs of its members and for FEPROMAS to provide trusted estimates of input requirements to its suppliers and bankers, which allowed their leaders to negotiate procurements and lines of credit remotely. The value of these systems, which extended well beyond their value during Naatal Mbay, was confirmed during the pandemic.

### Resilience Varies and Evolves Over Space and Time

All four networks were able to develop context-specific responses. The survey data showed varying food insecurity and shock responses driven by history, geography, and the organizational maturity of the networks as market-system agents. The food insecurity profiles varied from one organization to the next, as did their capacity to access credit or manage livestock assets. Therefore, there was not a one-size-fits-all delivery package for resilience but rather a series of strategic drivers that the networks adjusted and activated.

### Transforming the Systems to Prepare for Future Shocks

Despite these challenges, the networks were expecting a good harvest in 2020 given the adequate rainfall and their ability to maintain most of their farming activities, particularly seed multiplication and input programs. For 2021, networks said they intended to diversify their seeds and crops in the off-season into a more balanced mix of food security and cash



crops such as rice, cowpea, and maize, as well as horticulture and tree crops. This adjustment should result in additional income for farming households, give them access to food earlier, and hopefully protect against an overreliance on food purchases. Consequently, the networks also indicated that they intend to expand and diversify their seed programs beyond cereals in response to anticipated increased demand from members. Previously, networks accepted a loan repayment period that could extend to the following pre-season activities. Now, they will seek to “tighten” the repayment window and include the new unpaid balance notes as a standard clause in their contracts with banks. Entente de Diouloulou saw financial autonomy as critical to resilience and entered into advanced negotiations with three banks to adopt credit practices similar to those used by FEPROMAS, where farmer credit is integrated into commercial trading loans managed by the networks. Finally, the networks had recognized a need to expand their internal communications channels to collect and transmit data in case of physical roadblocks and other impediments.

---

## Conclusion

In Senegal, the most stringent COVID-19 emergency measures were lifted in June 2020. As of late 2020, the farmer networks expected a good 2020 harvest, which would replenish food stocks and reduce food insecurity. However, the household survey results showed that the COVID-19 lockdown had serious impacts on household food security for all networks and their members. Measures taken by the networks complemented traditional household coping mechanisms and appear to have allowed most members to continue to farm in 2020. Kissal Patim and the other networks, however, advocated for a third round of the survey in January 2021, after the harvest was completed, to truly assess how their members had been able to cope and rebound from the pandemic.

This study showed that farmer-led networks can play a key role in structuring market systems for resilience and enhancing community resilience capacities. The dedication demonstrated by the network

leaders during their response to COVID-19 and while carrying out this survey told us that systems initially designed to provide value-added extension and business services can also respond to economic and biological shocks and encourage the inclusion of more marginalized population segments in their networks.

The networks’ multifaceted response was rooted in the social trust capital developed by these farmer-led networks over the years. Embedded systemic practices, many of them owing to Feed the Future facilitation and market systems engineering, contributed to the resilience of the communities in which these organizations were operating. The survey data showed us that responsive group governance and data-driven extension and advisory approaches were applied in a low-literacy context. Yet the networks were able to maintain their bonding and link social capital by balancing humanitarian interventions, crop diversification, and financial engineering.

All farmer networks demonstrated a keen interest in the survey tool and said they intended to share their results with local authorities, promote the tool with other networks, and conduct complementary survey rounds to better understand the impact of the shock and respond accordingly. Future research could take several directions, including (1) comparing 2 years’ worth of production data to determine whether COVID-19 disruptions had an effect on yields; (2) investigating further the statistical relationship between household food security status and agricultural production outcomes, such as yields or sale; or (3) serving as a baseline for future development programs in those regions. Both value chain development and resilience monitoring are processes rooted in data and evidence. To target these two concurrent outcomes, it is useful to build on previous facilitation successes, local statistical expertise, and local data collection management capacity.

*“In a way, COVID-19 has had positive effects.”*

—Nimna Diayte, FEPROMAS

## References

- Agence Nationale de la Statistique et de la Démographie [Sénégal]. (2016). *Recensement général de la population et de l'habitat, de l'agriculture et de l'élevage (RGPHAE), 2013. Atlas démographique du Sénégal: Rapport Final [General Census of Population and Housing, Agriculture and Livestock (RGPHAE), 2013. Demographic atlas of Senegal: Final report]*. Division des Opérations des Terrain, Direction des Statistiques Démographiques et Sociales. [http://www.ansd.sn/ressources/publications/Rapport%20analyse\\_ATLAS-RGPHAE\\_13\\_Mars\\_2017\\_VF\\_last.pdf](http://www.ansd.sn/ressources/publications/Rapport%20analyse_ATLAS-RGPHAE_13_Mars_2017_VF_last.pdf)
- Arouna, A., Soullier, G., Mendez del Villar, P., & Demont, M. (2020). Policy options for mitigating impacts of COVID-19 on domestic rice value chains and food security in West Africa. *Global Food Security*, 26, 100405. <https://doi.org/10.1016/j.gfs.2020.100405>
- Bernier, Q., & Meinzen-Dick, R. (2014). Social capital and resilience. In S. Fan, R. Pandya-Lorch, & S. Yosef (Eds.), *Building resilience for food and nutrition security* (pp. 169–176). IFPRI. <https://doi.org/10.2499/9780896296787>
- Feed the Future. (2017). *Global food security strategy technical guidance objective 2: Strengthened resilience among people and systems*. [https://cg-281711fb-71ea-422c-b02c-ef79f539e9d2.s3.us-gov-west-1.amazonaws.com/uploads/2018/03/GFSS\\_TechnicalGuidance\\_Resilience.pdf](https://cg-281711fb-71ea-422c-b02c-ef79f539e9d2.s3.us-gov-west-1.amazonaws.com/uploads/2018/03/GFSS_TechnicalGuidance_Resilience.pdf)
- Initiative Prospective Agricole et Rurale (IPAR) & RTI International. (2017). *Etude de la consommation des cereales de base au Senegal [Study of the consumption of basic cereals in Senegal]*. Contract No. AID-685-C-15-00001. USAID/Senegal, Feed the Future Senegal–Naatal Mbay. [https://pdf.usaid.gov/pdf\\_docs/PA00TQ9D.pdf](https://pdf.usaid.gov/pdf_docs/PA00TQ9D.pdf)
- Initiative Prospective Agricole et Rurale (IPAR) & RTI International. (2019a). Senegal Naatal Mbay, cereal value chains: Data-driven agriculture. Contract No. AID-685-C-15-00001. USAID/Senegal, Feed the Future program. [https://pdf.usaid.gov/pdf\\_docs/PA00TRQH.pdf](https://pdf.usaid.gov/pdf_docs/PA00TRQH.pdf)
- Initiative Prospective Agricole et Rurale (IPAR) & RTI International. (2019b). *Senegal Naatal Mbay, cereal value chains: Producer networks*. Contract No. AID-685-C-15-00001. USAID/Senegal, Feed the Future program. [https://pdf.usaid.gov/pdf\\_docs/PA00TRQK.pdf](https://pdf.usaid.gov/pdf_docs/PA00TRQK.pdf)
- International Dietary Data Expansion (INDDEx) Project. (2018). *Data4Diets: Building blocks for diet-related food security analysis*. Tufts University, Gerald J. and Dorothy R. Friedman School of Nutrition Science and Policy. <https://inddex.nutrition.tufts.edu/data4diets>
- Le Nestour, A., & Moscoviz, L. (2020, April 24). *Five findings from a new phone survey in Senegal*. Center for Global Development. <https://www.cgdev.org/blog/five-findings-new-phone-survey-senegal>
- Moynihan, P., & Letterman, C. (2020, April 30). *The coronavirus pandemic's impact on Pew Research Center's global polling*. Pew Research Center. <https://www.pewresearch.org/fact-tank/2020/04/30/the-coronavirus-pandemics-impact-on-pew-research-centers-global-polling/>
- Vaughn, E. (2018). *Resilience measurement practical guidance note series 3: resilience capacity measurement*. Produced by Mercy Corps as part of the Resilience Evaluation, Analysis, and Learning (REAL). Associate Award.

## Resources for More Information

- Abdinor, M. Latane, A., & O'Planick, K. (2020, October 14). *COVID-19 is showing us how market systems can help build resilience*. Insights Blog. <https://www.rti.org/insights/covid-19-agricultural-market-systems-resilience>
- Abdinor, M. Latane, A., O'Planick, K., & Slaybaugh-Mitchell, T. (2020, September 15). *Learning and adapting during COVID-19, webinar 5: How can markets improve resilience?* [Webinar]. RTI International. <https://www.rti.org/event/archive/learning-and-adapting-during-covid-19-series-webinar-5-how-can-markets-improve-resilience>
- Adian, I., Doumbia, D., Gregory, N., Ragoussis, A., Reddy, A., & Timmis, J. D. (2020). *Small and medium enterprise in the pandemic: Impact, responses, and the role of development finance* (Policy Research Working Paper WPS 9414). World Bank. <https://openknowledge.worldbank.org/handle/10986/34552> <https://doi.org/10.1596/1813-9450-9414>
- Corper, P. (2020, May 12). *COVID-19 in Somalia: Leveraging finance to help Somali businesses in the face of crisis*. Marketlinks. <https://www.marketlinks.org/blogs/covid-19-somalia-leveraging-finance-help-somali-businesses-face-crisis>
- Initiative Prospective Agricole et Rurale (IPAR). (2019). *Notes sur les chaînes de valeur agricoles au Sénégal [Notes on agricultural value chains in Senegal]*. IPAR, USAID, and Feed the Future. <https://ipar.sn/Notes-sur-les-Chaines-de-Valeur-agricoles-au-Senegal.html?lang=fr>
- RTI International. (2018, March 1). *Improving cereal market systems in Senegal*. <https://www.rti.org/impact/improving-agriculture-market-systems-senegal>
- RTI International. (2020a). *COVID-19 in Senegal: Farmer-led organizations join the research efforts*. Teaser video (2:37) prepared for SEEP Network virtual annual conference on building resilience through market systems, October 26–30, 2020. Vimeo. <https://vimeo.com/470756152/9aef4add6c>
- RTI International. (2020b). *Senegal farmer networks respond to COVID-19: A summary of ongoing research*. “Voices from the field” video (18:25) prepared for SEEP Network virtual annual conference on building resilience through market systems, October 26–30, 2020. Vimeo. <https://player.vimeo.com/video/471526445>
- Marketlinks Team. (2020, January 20). *Market systems resilience measurement resources*. Marketlinks. <https://www.marketlinks.org/resources/market-systems-resilience-measurement-resources-0>
- Tadesse, L. (2020, October 27). *Not waiting for a savior*. Africa Is a Country. <https://africasacountry.com/2020/10/not-waiting-for-a-savior>
- US Agency for International Development (USAID). (2020a). *Bureau for Resilience and Food Security COVID-19 learning hub*. Agrilinks. <https://www.agrilinks.org/collections/usaids-bureau-resilience-and-food-security-covid-19-learning-hub>
- US Agency for International Development (USAID). (2020b, April 21). *External orientation document on private sector engagement for COVID-19 response*. <https://www.usaid.gov/coronavirus/pse-for-covid-19-response>
- USAID Global Development Lab. (2020, June 5). *A gendered approach to technology use for COVID-19 response*. Marketlinks. <https://www.marketlinks.org/blogs/gendered-approach-technology-use-covid-19-response>
- US Embassy in Somalia. (2020, June 9). *USAID helps slow spread of COVID-19 in Somalia with donation of 500,000 locally made masks*. <https://so.usembassy.gov/usaids-helps-slow-spread-of-covid-19-in-somalia-with-donation-of-500000-locally-made-masks/>
- US Embassy in Somalia. (2020, June 9). *USAID helps slow spread of COVID-19 in Somalia with donation of 500,000 locally made masks*. <https://so.usembassy.gov/usaids-helps-slow-spread-of-covid-19-in-somalia-with-donation-of-500000-locally-made-masks/>

## Appendix 1. Communes Covered by the Farmer Networks Monitoring the Impacts of COVID-19 on Agricultural Production

Region	Department	Commune	Network
<b>Kaffrine</b>	Kaffrine	Kahi	Saxemi de Kahi
		Kathiote	Saxemi de Kahi
<b>Kaolack</b>	Kaolack	Keur Baka	FEPROMAS
		Latmingué	FEPROMAS
	Nioro	Dabaly	FEPROMAS
		Darou Salam	FEPROMAS
		Gainthe Kaye	FEPROMAS
		Médina Sabakh	FEPROMAS
		Ngayène Sabakh	FEPROMAS
		Nioro	FEPROMAS
		Paoskoto	FEPROMAS
		Porokhane	FEPROMAS
		Taïba Niassène	FEPROMAS
<b>Kolda</b>	Kolda	Bagadadji	Kissal Patim
		Dialémbéré	Kissal Patim
		Mampatim	Kissal Patim
		Médina Chérif	Kissal Patim
<b>Ziguinchor</b>	Bignona	Djinaky	Entente Diouloulou
		Kafountine	Entente Diouloulou
		Kataba	Entente Diouloulou

FEPROMAS = Fédération des Producteurs de Maïs du Saloum.

## Appendix 2. COVID-19 Action Questionnaire

No.	Questions (French)	Questions (English)	Responses (French)	Responses (English)	
1	Avez-vous vendu du bétail au cours des 60 derniers jours ?	Have you sold livestock in the past 60 days?	1	Oui	Yes
			2	Non	No
2	Si oui, Combien ?	If yes, how many?			
3	Quelle partie des dépenses de votre ménage dépensez-vous actuellement en nourriture chaque mois ?	What share of your household income do you use for food each month?	1	Aucune	None
			2	Moins de la moitié	Less than half
			3	Moitié	Half
			4	Plus de la moitié	More than half
4	Au cours des 30 derniers jours, craigniez-vous que votre ménage n'ait pas assez de nourriture ?	Over the past 30 days, did you worry that your household would not have enough food?	1	Oui	Yes
			2	Non	No
5	À quelle fréquence vous êtes-vous inquiété que votre ménage n'ait pas assez de nourriture ?	How often?	1	Rarement (1–2 fois)	Rarely (1–2 times)
			2	Quelques fois (3–10 fois)	Sometimes (3–10 times)
			3	Souvent (plus de 10 fois)	Often (more than 10 times)
6	Au cours des 30 derniers jours, est-ce que vous ou un membre du ménage n'a pas été en mesure de manger les types que vous préféreriez en raison d'un manque de ressources ?	Over the past 30 days, were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources?	1	Oui	Yes
			2	Non	No
7	À quelle fréquence les membres du ménage étaient-ils pas en mesure de manger les types nourris que vous préféreriez ?	How often?	1	Rarement (1–2 fois)	Rarely (1–2 times)
			2	Quelques fois (3–10 fois)	Sometimes (3–10 times)
			3	Souvent (plus de 10 fois)	Often (more than 10 times)
8	Au cours des 30 derniers jours, est-ce que vous ou un membre du ménage avez dû manger une variété limitée fournie en raison d'un manque de ressources ?	Over the past 30 days, did you or any household member have to eat a limited variety of foods due to a lack of resources?	1	Oui	Yes
			2	Non	No
9	À quelle fréquence avez-vous dû manger une variété limitée fournie en raison d'un manque de ressources ?	How often?	1	Rarement (1–2 fois)	Rarely (1–2 times)
			2	Quelques fois (3–10 fois)	Sometimes (3–10 times)
			3	Souvent (plus de 10 fois)	Often (more than 10 times)
10	Au cours des 30 derniers jours, est-ce que vous ou un membre du ménage avez dû manger des aliments que vous ne vouliez vraiment pas manger en raison d'un manque de ressources pour obtenir d'autres types de nourriture ?	Over the past 30 days, did you or any household member have to eat some foods that you really did not want to eat because of a lack of resources to obtain other types of food?	1	Oui	Yes
			2	Non	No
11	À quelle fréquence vous ou un membre du ménage avez-vous dû manger des aliments que vous ne vouliez vraiment pas manger en raison d'un manque de ressources ?	How often?	1	Rarement (1–2 fois)	Rarely (1–2 times)
			2	Quelques fois (3–10 fois)	Sometimes (3–10 times)
			3	Souvent (plus de 10 fois)	Often (more than 10 times)
12	Au cours des 30 derniers jours, est-ce que vous ou un membre du ménage avez dû manger un repas plus petit que ce ne vous avez pas besoin parce qu'il n'y avait pas assez de nourriture ?	Over the past 30 days, did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?	1	Oui	Yes
			2	Non	No
13	À quelle fréquence vous ou un membre du ménage avez-vous dû manger un petit repas dont vous n'avez pas besoin parce qu'il n'y avait pas assez de nourriture ?	How often?	1	Rarement (1–2 fois)	Rarely (1–2 times)
			2	Quelques fois (3–10 fois)	Sometimes (3–10 times)
			3	Souvent (plus de 10 fois)	Often (more than 10 times)

(continued)

## Appendix 2. COVID-19 Action Questionnaire

(continued)

No.	Questions (French)	Questions (English)	Responses (French)	Responses (English)	
14	Au cours des 30 derniers jours, est-ce que vous ou un membre du ménage avez dû manger moins de repas par jour parce qu'il n'y avait pas assez de nourriture ?	Over the past 30 days, did you or any household member have to eat fewer meals in a day because there was not enough food?	1	Oui	Yes
			2	Non	No
15	À quelle fréquence vous ou un membre du ménage avez-vous dû manger moins de repas par jour parce qu'il n'y avait pas assez de nourriture ?	How often?	1	Rarement (1–2 fois)	Rarely (1–2 times)
			2	Quelques fois (3–10 fois)	Sometimes (3–10 times)
			3	Souvent (plus de 10 fois)	Often (more than 10 times)
16	Au cours des 30 derniers jours, il n'y a jamais eu de nourriture à manger dans votre maison en raison du manque de ressources pour obtenir de la nourriture ?	Over the past 30 days, was there ever no food to eat of any kind in your household because of lack of resources to get food?	1	Oui	Yes
			2	Non	No
17	À quelle fréquence n'y avait-il aucun aliment à manger de quelque sorte que ce soit dans votre boyau en raison d'un manque de ressources pour obtenir de la nourriture ?	How often?	1	Rarement (1–2 fois)	Rarely (1–2 times)
			2	Quelques fois (3–10 fois)	Sometimes (3–10 times)
			3	Souvent (plus de 10 fois)	Often (more than 10 times)
18	Au cours des 30 derniers jours, vous ou un membre du ménage vous êtes endormi la nuit parce qu'il n'y avait pas assez de nourriture ?	Over the past 30 days, did you or any household member go to sleep at night hungry because there was not enough food?	1	Oui	Yes
			2	Non	No
19	À quelle fréquence vous ou un membre du ménage vous êtes endormi la nuit parce qu'il n'y avait pas assez de nourriture ?	How often?	1	Rarement (1–2 fois)	Rarely (1–2 times)
			2	Quelques fois (3–10 fois)	Sometimes (3–10 times)
			3	Souvent (plus de 10 fois)	Often (more than 10 times)
20	Au cours des 30 derniers jours, est-ce que vous ou un membre du ménage est resté toute la journée et toute la nuit sans rien manger parce qu'il n'y avait pas assez de nourriture ?	Over the past 30 days, did you or any household member go a whole day and night without eating anything because there was not enough food?	1	Oui	Yes
			2	Non	No
21	À quelle fréquence vous ou un membre du ménage êtes-vous allé toute la journée et toute la nuit sans rien manger parce qu'il n'y avait pas assez de nourriture ?	How often?	1	Rarement (1–2 fois)	Rarely (1–2 times)
			2	Quelques fois (3–10 fois)	Sometimes (3–10 times)
			3	Souvent (plus de 10 fois)	Often (more than 10 times)
22	Combien de céréales avez-vous sous la main pour la consommation des ménages ? (Quantité)	How much cereal do you have on stock for household consumption?			
23	Craignez-vous actuellement que les aliments produits par votre ménage s'épuisent ?	Are you afraid that the food produced by your household will run out?	1	Oui	Yes
			2	Non	No
24	Craignez-vous actuellement que les aliments produits ou achetés par votre ménage ne durent pas et que vous ne puissiez pas en acheter davantage ?	Are you afraid that the food produced or purchased by your household will run out and you will not be able to buy more?	1	Oui	Yes
			2	Non	No
25	À quand remonte la dernière fois que vous avez acheté des céréales pour la consommation des ménages ?	When was the last time you bought cereals for household consumption?			

(continued)

## Appendix 2. COVID-19 Action Questionnaire

(continued)

No.	Questions (French)	Questions (English)	Responses (French)	Responses (English)	
26	Pensez-vous que vous pouvez accéder à des aliments à acheter pour la consommation domestique si vous avez besoin ?	Do you think that you could access food for purchase for household consumption if you needed it?	1	Oui	Yes
			2	Non	No
27	Vous attendez-vous à utiliser moins de semences, d'engrais, de main-d'œuvre (autres intrants) pour cette saison ? (Tour 1 seulement)	Are you waiting for more seed for this growing season?	1	Oui	Yes
			2	Non	No
28	Prévoyez-vous de changer vos pratiques culturales habituelles pour faire face à la pandémie ?	Have you changed your cultivation habits because of the pandemic?	1	Oui	Yes
			2	Non	No
29	Si « Oui » à question 28, Comment ?	If "yes" to question 28, how?	1	Réduire les surfaces cultivées	Reduce cultivated area
			2	Réduire les coûts production	Reduce production costs
			3	Pratiquer des cultures rapides /changer de cultures / Changer de stratégie	Switch to short-cycle crops, change groups
			4	Privilégier la culture céréalière / vivrière	Favor cereals or food crops
			5	Prévoir la culture maraichère en plus des céréales	Cultivate market gardens in addition to cereals
			6	Augmenter les surfaces cultivées	Increase cultivated area
			7	Mettre en place une partie des terres	Rent part of land
			8	Autres à préciser	Other
30	Avez-vous utilisé moins de semences, d'engrais, de main-d'œuvre (autres intrants) pour cette saison que vous ne faites pas normalement (tours 2, 3)?	Have you used less seeds, fertilizer, or manpower (or other inputs) for this season than you normally would?	1	Oui	Yes
			2	Non	No
31	Avez-vous eu des difficultés à accéder aux semences, aux engrais, à la main-d'œuvre (autres intrants) cette saison?	Have you experienced challenges accessing seeds or other inputs this season?	1	Oui	Yes
			2	Non	No
32	Qu'avez-vous fait pour atténuer ces difficultés?	What have you done to address these challenges?			
33	Comptez-vous vendre des céréales au cours de l'année à venir?	Do you think you will be able to sell cereals this coming year?	1	Oui	Yes
			2	Non	No
34	Combien?	For how much			
35	Quel est votre prix prévu pour l'année prochaine?	What price next year?			
36	Quel était votre dernier prix ?	What was your last price?			
38	Y a-t-il des services que vous aimeriez que l'organisation fournisse qu'ils ne fournissent pas ?	Are there services that you would like your network to provide that they do not?	1	Oui	Yes
			2	Non	No
39	Vous attendez-vous à recevoir ou avez-vous déjà reçu une aide alimentaire ?	Have you already received or do you expect to receive food aid?	1	Oui	Yes
			2	Non	No

(continued)

## Appendix 2. COVID-19 Action Questionnaire

(continued)

No.	Questions (French)	Questions (English)	Responses (French)		Responses (English)					
40	Comparé aux années passées avez-vous cultivées plus ou moins ?	Compared with previous years, have you cultivated more or less?	1	Plus	More					
			2	Moins	Less					
41	Si moins les raisons sont liées au COVID ou non ?	If less, are the reasons because of COVID?	1	Oui	Yes					
			2	Non	No					
42	Sélectionner les noms des cultures en stock dans l'exploitation (en grenier et hors grenier).	Select the names of the crops in stock on the farm (in the granary and outside the granary).	1	Riz	21	Pastèque	1	Rice	21	Watermelon
			2	Arachide	22	Voandzou	2	Peanuts	22	Bambara groundnut
			3	Anadacarde	23	Melon	3	Cashew nuts	23	Melon
			4	Oignon	24	Patate douce	4	Onions	24	Sweet potatoes
			5	Mangue	25	Manioc	5	Mango	25	Cassava
			6	Aubergine	26	Oseille	6	Eggplant	26	Sorrel
			7	Maïs	27	Taro	7	Maize	27	Taro
			8	Niébé	28	Persil	8	Cowpea	28	Parsley
			9	Piment	29	Menthe	9	Chili peppers	29	Mint
			10	Tomate	30	Laitue	10	Tomatoes	30	Lettuce
			11	Mil	31	Jaxatu	11	Millet	31	Jaxatu eggplant
			12	Citrons	32	Concombre	12	Lemons	32	Cucumber
			13	Chou	33	Courge	13	Cabbage	33	Squash
			14	Oranges	34	Haricot vert	14	Oranges	34	Green beans
			15	Gombo	35	Calebassier	15	Okra	35	Calabash (gourd)
			16	Carotte	36	Betterave	16	Carrots	36	Beets
			17	Navet	37	Igname	17	Turnips	37	Yam
			18	Sorgho	38	Autres céréales	18	Sorghum	38	Other grains
			19	Fonio	39	Autres rentes	19	Fine-grain millet	39	Other annuals
			20	Sésame	40	Autres fruits	20	Sesame	40	Other fruits
43	Dans quel but mais principal, stockez-vous issus de la récolte ?	What was the main reason for your harvest stock?	1	Autoconsommation	Self-consumption					
			2	Vente à des prix plus élevés	Sell at higher prices					
			3	Vente pour d'autres besoins	Sell for other needs					
			4	Semence	Seeds					
			5	Alimentation animale	Food for livestock					
44	Si « Autoconsommation », combien de temps ce stock va couvrir les besoins de votre exploitation ?	If "self-consumption", how long do you think that your stock will cover your household needs?								
45	Précisez l'unité	What unit?	1	Jour	Day					
			2	Mois	Month					
			3	Année	Year					
46	Par rapport à l'année dernière le stock actuel couvre-t-il ?	Last year, how much of the year did your stock cover?	1	Moins que l'année dernière	Less than last year					
			2	Plus que l'année dernière	More than last year					



## Appendix 3. Senegal COVID-19 Safety Protocols for Data Collection

French	English
<p><b>But:</b> Ce document décrit les mesures qui seront prises pour garantir la sécurité des agents de terrain, des organisations d'agriculteurs et des agriculteurs participants lors de la collecte de données, particulièrement lors d'interactions en personne. Cette dernière concerne un échantillon de 800 agriculteurs environs, répartis entre les zones center et sud du Sénégal. L'étude est financée par RTI International et cherche à évaluer les effets de COVID-19 sur les ménages et la campagne agricole 2020.</p>	<p><b>Purpose:</b> This document describes the steps that will be taken to protect the safety of farmer organization field agents and farmer participants during in-person data collection to record the agricultural practices used by a sample of 800 farmers in central and south Senegal. Data collection is taking place as part of RTI International's internally funded study on the effects of COVID-19 on farming households.</p>
<p><b>Quel:</b> Les agents sur le terrain, employés par nos quatre réseaux partenaires seront formés par STATINFO, entreprise locale assurant la mise en œuvre du dispositif. Ladite formation se fera à distance via l'application Zoom. La collecte des données se fera à travers des visites de terrain et par des appels téléphoniques auprès des agriculteurs afin de suivre les progrès de la campagne et l'application par les agriculteurs des bonnes pratiques agricoles et de leurs rendements. L'étude vise aussi à recueillir des renseignements sur les stratégies d'adaptation des ménages agricoles au cours de COVID-19</p>	<p><b>What:</b> Field agents employed by our four partner farmer organizations will be trained virtually by data collection partner STATINFO on conducting phone interviews to collect information about farming households' coping strategies during COVID-19. This training will be done using the Zoom software platform. Field agents will conduct in-person field visits and phone interviews with farmers to track the progress of the season and farmers' use of good agricultural practices and their resulting yields. The study also will collect information concerning coping strategies related to the COVID-19 pandemic.</p>
<p><b>Quand:</b> Les visites sur le terrain auront lieu une fois chaque vague de collecte de données ; l'étude comprendra deux séries de collecte de données au total. On s'attend à ce que les visites sur le terrain ne durent pas plus de 45 minutes par personne interviewée.</p>	<p><b>When:</b> In-person field visits will take place once each round of data collection; the study will comprise two rounds of data collection in total. In-person field visits are expected to last no longer than 45 minutes.</p>
<p><b>Qui:</b> Les ménages agricoles choisis sont enquêtés par un agent résidant dans le même département et employé par l'organisation paysanne dont le producteur est membre.</p>	<p><b>Where:</b> Field agents will schedule their field visits via phone ahead of time. Field agents will meet the farming household representative at their field outdoors.</p>
<p><b>Comment:</b></p> <ul style="list-style-type: none"> <li>• Les ménages seront invités à signaler les manifestations de symptômes de COVID ou de cas confirmés dans leur ménage; si le ménage signale des incidences de maladie, les agents sur le terrain n'effectueront pas de visites sur le terrain avant 14 jours après que le cas ait été signalé ou jusqu'à ce que les symptômes du membre du ménage se soient dissipés, quelle que soit la durée.</li> <li>• Les jours des visites prévues sur le terrain, STATINFO appellera chaque agent sur le terrain et procédera à un dépistage des symptômes de COVID-19, y compris la toux sèche, la fièvre, d'autres symptômes respiratoires, ou la perte de goût ou d'odeur. Si les agents sur le terrain signalent des symptômes, ils ne procéderont pas à leurs visites sur le terrain pendant 14 jours ou jusqu'à ce que leurs symptômes aient disparu, selon la durée la plus longue.</li> </ul>	<p><b>How:</b></p> <ul style="list-style-type: none"> <li>• Households will be asked to report incidences of COVID symptoms or confirmed illness in their households during interview scheduling and before visits; if the household reports incidences of illness, field agents will not conduct field visits until 14 days after the incidence was reported or until after the symptoms of the household member have dissipated, whichever is longer.</li> <li>• On the days of scheduled field visits, STATINFO will call each field agent and conduct a screening for COVID-19 symptoms, including dry cough, fever, other respiratory symptoms, or loss of taste or smell. If field agents report any symptoms, they will not proceed with their field visits for 14 days or until their symptoms are gone, whichever is longer.</li> <li>• Field agents will be selected according to their proximity to sampled households to minimize the transport needed to reach them. No public transportation will be used to reach the households. Travel will be accomplished by foot, motorbike, or private vehicle when necessary, with adherence to face covering requirements and hand sanitizers.</li> </ul>

(continued)

### Appendix 3. Senegal COVID-19 Safety Protocols for Data Collection (*continued*)

French	English
<p><b>Comments (<i>continued</i>)</b></p> <ul style="list-style-type: none"> <li>• Les agents sur le terrain recevront des masques et des gels hydro alcooliques pour les mains et les représentants des ménages agricoles avec lesquels ils interagiront. Le Gouvernement sénégalais exige que toutes les personnes portent des masques en public, y compris dans les taxis, les marchés et les véhicules privés. Les agents de terrain resteront à un minimum de 2 mètres des agriculteurs et de toute autre personne présente lors de leurs visites sur le terrain. Les agents sur le terrain auront leurs masques et utiliseront un désinfectant pour les mains avant de commencer leur visite et après avoir terminé leur visite. Les agriculteurs recevront l'ordre de faire de même, et tous seront avisés de se laver les mains immédiatement après leur arrivée dans une installation qui a des capacités de lavage des mains.</li> <li>• Si un agent sur le terrain observe qu'un participant semble avoir les symptômes de COVID-19 notamment la toux, de la fièvre ou d'autres signes de maladie, il ne procédera pas à la collecte de données et son interview avec le producteur sera reprogrammé 14 jours plus tard ou après que le producteur a signalé que les symptômes ont disparu, selon le cas plus long.</li> </ul>	<p><b>How (<i>continued</i>)</b></p> <ul style="list-style-type: none"> <li>• Field agents will be provided with face coverings and hand sanitizer for themselves and the farming household representatives they will interact with. The Government of Senegal requires all persons to wear face coverings while in public, including in taxis, at markets, and in private vehicles. Field agents will remain a minimum of 2 m from farmers and anyone else present during their field visits. Field agents will have their face coverings on and use hand sanitizer before beginning their visit and after completing their visit. Farmers will be instructed to do the same, and all will be advised to wash their hands immediately upon arriving at a facility that has handwashing capabilities.</li> <li>• If a field agent observes that a participant appears to have coughing, fever, or other signs of illness, they will not proceed with the data collection and will reschedule for 14 days later or after the household reports symptoms are gone, whichever is longer.</li> </ul>

## Appendix 4. Pre-Data Collection Focus Group Discussion Guide (in French and English)

### COVID-19 – Point de vue des Réseaux de Producteurs

#### FOCUS GROUP no. 1

1. Au début de la pandémie COVID-19, quels risques aviez-vous identifiés et quelles mesures avez-vous prises en tant que réseau? Quel processus consultatif a appuyé cette prise de décision?
2. Quels partenariats externes votre organisation a-t-elle noué pour atténuer les effets de la pandémie?
  - a. Partenaires de la chaîne de valeur (organisations des producteurs, fournisseurs, banques et assurance, acheteurs)
  - b. Partenaires institutionnels locaux
  - c. Structures nationales
  - d. Bailleurs de fonds
3. Quelles ressources financières et services ont été mobilisés à ce jour en appui à la pandémie?
4. Selon vous, quel a été l'effet de la pandémie sur votre communauté? Quelles sont les stratégies qui ont été mises en œuvre au niveau des exploitations agricoles? Au niveau des ménages?
5. Comment pensez-vous que vos membres ont été avantagés par leur appartenance à votre réseau ?
6. Quels effets indirects pensez-vous que votre réseau a pu avoir sur la communauté dans son ensemble?
7. Selon vous, dans la chaîne de valeur, qui sont les acteurs qui auront été les plus frappés et ceux qui ont su tirer leur épingle du jeu? Pourquoi?
  - a. Parmi les producteurs (femmes, jeunes)
  - b. Parmi les fournisseurs d'intrants
  - c. Parmi les banques
  - d. Parmi les acheteurs
8. Quel est selon vous l'état actuel du stock de soudure chez vos membres et non membres? Prévoyez-vous une crise alimentaire?
9. Comment anticipez-vous la campagne 2021?

### COVID-19 – Producer Networks Perspective

#### FOCUS GROUP no. 1

1. At the start of the COVID-19 pandemic, what risks did you identify and what actions did you take as a network? What consultative process supported this decision making?
2. What external partnerships has your organization established to mitigate the effects of the pandemic?
  - a. Partners in the value chain (producer organizations, suppliers, banks and insurance companies, buyers)
  - b. Local institutional partners
  - c. National structures
  - d. Funders
3. What financial resources and services have been mobilized to date in support of the pandemic?
4. What effect do you think the pandemic has had on your community? What strategies have been implemented at farm level? At the household level?
5. How do you think you think your members have benefited from being part of your network?
6. What indirect effects do you think your network may have had on the community as a whole?
7. In your opinion, in the value chain, who are the players who have been the most affected and those who have succeeded? Why?
  - a. Among producers (women, youth)
  - b. Among input suppliers
  - c. Among the banks
  - d. Among buyers
8. What do you think is the current state of the cereal stock in your members and nonmembers? Are you expecting a food crisis?
9. How do you anticipate the 2021 season?

## Appendix 5. Video Interview Questions

The response of the farmer networks to the COVID-19 shock was captured through individual interviews recorded on Zoom. Network leaders of the FEPROMAS, Kissal Patim and Entente de Diouloulou networks responded to the following questions. An edited version with English subtitles is accessible at the following link: <https://player.vimeo.com/video/471526445>.

1. What were the effects of the COVID-19 shock since there were also late rains?
2. How did the farmers [in your network] first react?
3. How did the networks respond to mitigate the effects? And how much time passed before that response?
4. What measures has the network taken to prepare for next year and future shocks?
5. What is your biggest lesson from your experience with COVID?



RTI International is an independent, nonprofit research institute dedicated to improving the human condition. We combine scientific rigor and technical expertise in social and laboratory sciences, engineering, and international development to deliver solutions to the critical needs of clients worldwide.

[www.rti.org/rtipress](http://www.rti.org/rtipress)

**RTI Press publication RR-0045-2106**