# Private Agricultural Service Provider (PASP) Model
# Last-Mile Agricultural Service Delivery for Smallholder Farm Families

## Annual PASP Survey Report

Rwanda - Input sales on bicycle

Guatemala - Poultry customers

Senegal - Fertilizer delivery

Guatemala - Chicken vaccination

**March 2021**

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Contents

## Acronyms

| | |
|---|---|
| COVID-19 | Illness caused by infection SARS-CoV-2 (Novel Coronavirus) infection |
| CRS | Catholic Relief Services |
| e-PASP | App used by PASPs |
| GT | Guatemala |
| MFI | Microfinance Institution |
| NGO | Non-Governmental Organization |
| OverOps | CRS Overseas Operations |
| PASP | Private Agricultural Service Provider |
| PSP | Private Service Provider |
| RW | Rwanda |
| SILC | Savings and Internal Lending Communities |
| SN | Senegal |

## Introduction

The PASP model was developed to mitigate unfavorable, cyclical issues for subsistence, smallholder farm families who struggle to earn a stable income each growing season due to a lack of access to quality inputs in the right amounts and sources of affordable finance, as well as insufficient delivery infrastructure. Many government agencies, NGOs, and social enterprises have put agricultural advisory services in place to help farmers to increase yields and access markets, but often overlook farmers living and working in the most remote areas. These services focus on building farmers' technical capacity by an overstretched and insufficient cadre of agents or extension workers. These systems perpetuate a cycle that maintains or slightly improves existing standards, without focusing on developing the business management skills of farmers and/or the agents themselves. Furthermore, they often fail to reach the poorest farmers, most of whom are women. Women receive only 5% of agriculture training and advisory services worldwide, in part because of time poverty and limited mobility, but also because of negative gender norms related to household decision-making. Moreover, many rural young people lack viable market entry prospects, which discourages them from entering the sector, contributing to chronic youth unemployment and depriving a generation of profiting from the agricultural sector.

The OverOps Innovation Fund's Private Agricultural Service Provider (PASP) Model Project seeks to address these inequities with a focused effort on increasing the capacity of PASPs to advise farmers on quality input use, increase access to quality inputs and/or basic veterinary services to maximize impact on their communities through increased livelihoods and improved crop production. The project is creating a stable income stream for the PASPs themselves, who are often individuals with significant promise and recognition in their communities yet have few opportunities to generate a basic income.

The annual PASP survey, whose results are reported here, aims to help CRS understand and measure the value of the PASP model to PASPs and their farmer customers. The survey asked questions to evaluate the inputs and services the PASPs offer, identify what customers have purchased, how they have paid for the PASPs' inputs and technical services, and the role CRS' savings group methodology – Savings and Internal Lending Communities (SILC) – played (if any) in increasing access to financial resources for customers' investment in agriculture. By gathering insights from 63 of the 65 project PASPs,[3] 234 customers, as well as 4 financial institutions and 8 suppliers in the three project countries – Guatemala, Rwanda, and Senegal – the annual PASP survey serves to inform CRS and its implementing partners regarding the overall value and sustainability of the PASP model; and to influence the structure of future projects that adopt the PASP model.

## Methods and limitations

### Survey tools

To understand the project's PASPs and their customer' experiences, the project team developed four survey tools: one each to be administered to PASPs, customers, agro-dealers, and financial service providers. While each survey tool asked about various topics, some specific to each segment, their combined information helps to answer key questions about the viability and value of the PASP model. The summary of the survey tools' main topics are shown in Table 1.

[3] One PASP in Senegal was unavailable at the time data was collected and one PASP in Guatemala declined to participate in the mobile phone interview.

*Table 1. Survey tools and main topics*

| Survey tool | Main topics |
|---|---|
| PASP | Input sales<br>Wholesale purchase income sources<br>Input delivery<br>PASP certification<br>Marketing<br>Quality of PASP services<br>e-PASP<br>PASP network/business groups<br>Income and net income<br>PASP continuation |
| Customer | PASP interaction<br>Input purchases<br>Last-mile service delivery<br>Price and payment methods<br>Customer satisfaction<br>Competition<br>Use of PASP services<br>Production<br>Overall judgment of the PASP |
| Agro-dealer | Advantages and disadvantages of working with PASPs compared to other types of intermediaries<br>Structure of agreements with PASPs<br>Likelihood of continuing to work with PASPs in the future |
| Financial institutions | Loan sizes and terms for PASPs<br>Reasons for lending to PASPs<br>Likelihood of lending again to PASPs |

## Sampling

To obtain insights relating to all active PASPs, we interviewed all available PASPs. We then randomly sampled 3-4 customers affiliated with each PASP, from the PASPs' e-PASP customer lists. The customer target sample size was 252, or 84 customers per project country.

In addition, eight agro-dealers, who supplied inputs to PASPs, were to be interviewed; as well as six MFIs, two in Rwanda and four in Senegal, who had provided finance (loans) to PASPs.[4] Table 2 below shows the annual survey target sample by country and respondent type:

*Table 2. Annual survey target sample by country and respondent type*

| Sampled population | Guatemala | Rwanda | Senegal | *Total* |
|---|---|---|---|---|
| PASPs | 15 | 30 | 20 | *65* |
| Customers | 84 | 84 | 84 | *252* |
| Agro-dealers | 2 | 4 | 2 | *8* |
| Financial institutions | 0 | 2 | 2 | *4* |

[4] The Guatemalan PASPs did not work with MFIs.

### Survey administration

To administer the surveys, each country program (CP) hired and trained teams of professional survey enumerators. The enumerators then administered the surveys by mobile phone to the selected respondents due to COVID 19 travel and gathering restrictions.

The training cascade had two steps: first, the principal research team trained the CP staff on the purpose and structure of the surveys. This training was completed remotely, as the COVID-19 pandemic prevented the research team from traveling to each participating CP for in-person trainings. Second, the CP staff conducted one-day enumerator trainings, which included trainings on the purpose and structures of the survey tools, as well as the use of CommCare for recording data; and a practice survey by mobile phone with one customer per enumerator. These enumerator trainings were completed remotely in Guatemala and Rwanda, and in person in Senegal.

Once trained, sampled respondents – PASPs, customers, agro-dealers, and MFIs – were distributed amongst the enumerators, and the enumerators were given one week to complete their surveys. CP staff and the project research team monitored the data submitted via CommCare, and CP staff intervened as needed to correct or delete survey submissions that appeared to be practice, and/or to have been submitted in error.

### Study Limitations

First, enumerator trainings were limited by format and time. Due to study and project timelines, the enumerator trainings in each CP were held over the course of one day, potentially limiting the enumerators' understanding of the survey tools, as well as their practice with those tools prior to conducting the mobile phone interviews. Moreover, the trainings may not have provided adequate time for the enumerators to reflect on their practice surveys, to inform improvements to the survey tools. Some suggestions for improvements were communicated to the researchers upon completion of the enumerator trainings, but further improvements may have been possible.

Second, due to COVID-19 travel restrictions and other precautions, the surveys were conducted by mobile phone, and the sample was therefore limited to those customers who had listed – and functioning – mobile phone numbers; and who answered the calls and were willing, and had sufficient battery charge, to remain on the mobile phone long enough to complete the survey. While the sampling bias effects are difficult to determine from the data submitted, in-person survey administration would likely have broadened the sampling frame to include customers without functioning mobile phones.

Finally, survey submissions to CommCare varied in quality. While most submissions were complete and of high quality, several had to be rejected due to (1) being evidently practice surveys, or (2) being incomplete and/or of uncertain validity. In consequence, the data cleaning procedure may have inadvertently deleted some valid surveys.

## Results

### Demographics

### Customers

The endline study interviewed 234 farmer customers, comprising 104 women and 130 men (Table 3). All 234 interviewed customers were served by the 65 PASPs included in the sample, yielding about 3.6 customers per PASP. About 75% (173) of customers surveyed had worked with their PASP longer than two years; 19.4% (45) had worked with their PASP between one and two years; and the remaining 6% (14) less than one year.

*Table 3: Customer Gender by Country, frequency and percentage*

| Sex | Country | | | |
|---|---|---|---|---|
| | **GT** | **RW** | **SN** | **Total** |
| Female | 34 | 42 | 28 | 104 |
| % | 55.7 | 48.8 | 32.2 | 44.4 |
| Male | 27 | 44 | 59 | 130 |
| % | 44.3 | 51.2 | 67.8 | 55.6 |
| **Total** | **61** | **86** | **87** | **234** |

Respondents' ages ranged from 19 to 75, with the median 44 years old. Twenty-nine percent (67) of the customers interviewed were in the 18-35 age range. Of the 196 respondents who answered the question regarding who is the head of their household, 76% (149) said they themselves were, and 24% (47) said their spouse was head of household. Male respondents were more likely than female to identify as heads of household, with 97.4% (113 of 116) of men identifying themselves as heads of household, versus just 45% (36 of 80) of women saying the same. Most respondents – 83.8% – were married, 7.7% were separated/divorced and the remaining 8.5% were single. Across the three countries in the study, households averaged 9.3 members, with Senegalese households averaging 15 members, Guatemalan 6.2 and Rwandan 5.[5]

Over half of customers interviewed (55.6%) identified as SILC members, with most of these in Rwanda and Senegal (Table 4).

*Table 4: SILC membership by country, frequency and percentage*

| SILC member | Country | | | |
|---|---|---|---|---|
| | **GT** | **RW** | **SN**[6] | **Total** |
| No | | | | |
| Frequency | 53 | 24 | 25 | 102 |
| % | 86.9 | 27.9 | 30.5 | 45 |
| Yes | | | | |
| Frequency | 8 | 62 | 57 | 127 |
| % | 13.1 | 72.1 | 69.5 | 55 |
| Total | 61 | 86 | 85 | 229 |

Most customers (72.7%, or 168) sold or planned to sell some portion of their agricultural or animal production (Table 5). Percentages were higher in Rwanda (84.7%, or 72 customers) and Senegal (78.8%, or 67) than in Guatemala (47.5%, or 29), where most customers interviewed raised poultry and may not have sold them. Men on average were more likely to sell (78.1%, or 100 men said they planned to sell) than were women (66%, or 68).

[5] It is possible that the household sizes for some Senegalese customer respondents were recorded erroneously. The national average household size in Senegal in 2019 was 8.7 (UN Department of Economic and Social Affairs, https://population.un.org/Household/index.html#/countries/686, accessed 24 March 2021).

[6] Two customer respondents in Senegal were uncoded on the SILC membership variable.

*Table 5. Customers' sales of agricultural or animal production, by country and gender*

| Did you sell any of your agricultural or animal production this year, or do you plan to do so this year? | Country | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | GT | | RW | | SN | | Aggregate | |
| | Male | Female | Male | Female | Male | Female | Male | Female |
| No | | | | | | | | |
| Frequency | 12 | 20 | 6 | 7 | 10 | 8 | 28 | 35 |
| % | 44.4 | 58.8 | 14.4 | 17.1 | 17.5 | 27.6 | 21.7 | 34 |
| Yes | | | | | | | | |
| Frequency | 15 | 14 | 39 | 34 | 47 | 21 | 101 | 69 |
| % | 55.6 | 41.2 | 86.7 | 82.9 | 82.5 | 72.4 | 78.3 | 66 |
| Total | 27 | 34 | 45 | 41 | 57 | 29 | 129 | 104 |

## PASPs

The researchers interviewed all 63 PASPs active in the project. Of those, 76.2% (48) were male and 23.8% (15) female (Table 6). The PASPs served on average 218 customers each.[7]

*Table 6: PASP Gender by Country*

| Gender | Country | | | |
|---|---|---|---|---|
| | GT | RW | SN | Aggregate |
| Female | 0 | 11 | 4 | 15 |
| % | 0 | 36.7 | 21.1 | 23.8 |
| Male | 14 | 19 | 15 | 48 |
| % | 100 | 63.3 | 79 | 76.2 |
| Total | 14 | 30 | 19 | 63 |

The median PASP age at the time of interview was 40 years old, with the youngest 23 and the oldest 63. Thirty-two percent (20) of the PASPs were in the 18-35 age range. Over half of PASPs (36) reported a high school education or better, while 37.8% (24) reported completing at least some primary school education, and the remaining 4.8% (3) having no formal education. Approximately half of PASPs were certified as SILC PSPs, though this statistic varies by country (Table 7).

*Table 7: Tabulation of PASP Gender and SILC Certification, by Country*

| Country | Sex | SILC PSP | | | |
|---|---|---|---|---|---|
| | | No | | Yes | |
| | | N | % | N | % |
| GT | Female | 0 | 0 | 0 | 0 |
| | Male | 11 | 78.6 | 3 | 21.4 |
| | Total | 11 | 78.6 | 3 | 21.4 |
| RW | Female | 7 | 63.6 | 4 | 36.4 |
| | Male | 11 | 57.9 | 8 | 42.1 |
| | Total | 18 | 60 | 12 | 40 |
| /SN | Female | 1 | 25 | 3 | 75 |
| | Male | 1 | 6.7 | 14 | 93.3 |
| | Total | 2 | 10.5 | 17 | 89.5 |
| **Total** | | **31** | **49.2** | **32** | **50.8** |

[7] The median number of customers is 80, and the range is 18 to 3,000.

### Suppliers

The research team interviewed six suppliers: four in Rwanda and two in Senegal. Of those interviewed, 83.33% (5) indicated that they work with multiple PASPs or PASP networks. All six suppliers stated that working with PASPs was advantageous, typically citing that PASP cooperation allows suppliers to move large amounts of product and reinforce their market presence.

Half of the suppliers had formal, written agreements with PASPs (Table 8). The terms of these agreements contained some arrangement of either shared or free delivery costs, as well as provision of technical advice to the PASP. All six suppliers interviewed expressed willingness to continue to work with PASPs, citing that collaboration is beneficial, particularly in enabling the suppliers to sell inputs and services to otherwise unreachable clients. When asked what they would recommend to improve the PASPs' business operations, Rwandan suppliers recommended that PASPs offer new products for sale. Senegalese suppliers recommended improvements to the supply chain, such as advance inventory, storage, funding access, and partnership agreements that include producers.

*Table 8: Supplier Formal Agreements with PASPs by Country*

| Do you have a formal, signed agreement with the PASPs or PASP networks with which you work? | Country | | |
|---|---|---|---|
| | RW | SN | Total |
| No | 1 | 2 | 3 |
| % | 25 | 100 | 50 |
| Yes | 3 | 0 | 3 |
| % | 75 | 0 | 50 |
| **Total** | **4** | **2** | **6** |

### Financial Institutions

The annual PASP survey was unable to collect much information from the sample of financial institutions that were approached by the PASPs for loans, as there were only four: two each in Rwanda and Senegal.[8] Of these four, 75% (3) were microfinance institutions, and the remaining lender was the Kaolack branch of the Banque Agricole, a national financial institution in Senegal. Of these, 75% (3) did lend to the PASPs with whom they worked. (Only the MFI in Fatick, Senegal, did not lend). To explain why the financial institutions decided to extend credit to the PASPs, the institutions indicated that they had a good understanding of the PASP model, that the PASPs provided good documentation, and for one, the Banque Agricole, that they were reassured by the guarantee provided by CRS. All three financial institutions that lent money to PASPs noted that the PASP's provision of a formal guarantee, in the form of either cash or a land title, was a key term in their decision to lend. Of the three financial institutions that lent money, two had already been repaid in full by the time of the survey, while the third stated that the PASPs were on track to repay on time and in full.

The three financial institutions that had lent money to PASPs expressed willingness to lend to the PASPs again. Of these, two said they would be willing to lend more money than previously, and the third stated that they would be comfortable lending the same amount.[9]

## PASP Model

### Last-mile service to customers

Although most PASP customers in 2020 were repeat customers, PASPs did provide last-mile inputs and technical services to underserved or unserved customers. About 32% (75) of customer respondents who bought inputs from a PASP said that 2020 was the first time they had bought from their

[8] The financial institutions whose representatives were interviewed in Senegal were CMS Crédit Mutuelle du Sénégal and Banque Agricole; in Rwanda they were RIM and Urwego Bank.

[9] The financial institution that stated they would not increase the loan amount cited difficulties with repayment in the last days of the loan period, thus a larger loan would be more difficult for the PASPs to repay.

PASP (Table 9); and of these customers, 37.3% (28) had never bought these inputs before, from any source (Table 10). These 28 customers included 21 in Senegal, five in Rwanda, and one in Guatemala. While these 28 customers comprise a small share (12%) of the 234 customers interviewed, that this share is nonzero serves as evidence that PASPs do reach those customers who had heretofore been unserved by other agricultural input suppliers.

*Table 9. Were the inputs you bought last season from your local PASP the first time you had bought from your local PASP? (N=234)*

| Country | % No response (N) | % Do not recall (N) | % No (N) | % Yes (N) |
|---|---|---|---|---|
| GT | 0 | 6.6 (4) | 85.3 (52) | 8.2 (5) |
| RW | 0 | 0 (0) | 80.2 (69) | 19.8 (17) |
| SN | 1.2 (1) | 0 (0) | 37.9 (33) | 60.9 (53) |
| ***Total*** | ***0.4 (1)*** | ***1.7 (0)*** | ***65.8 (154)*** | ***32.1 (75)*** |

*Table 10. Were the inputs you bought last season from your local PASP the first time you had bought these inputs from any source? (N = 75)*

| Country | % Do not recall (N) | % No (N) | % Yes (N) |
|---|---|---|---|
| GT | 20 (1) | 40 (2) | 40 (2) |
| RW | 0 (0) | 70.6 (12) | 29.4 (5) |
| SN | 0 (0) | 60.4 (32) | 39.6 (21) |
| ***Total*** | ***1.3 (1)*** | ***61.3 (46)*** | ***37.3 (28)*** |

Buying agricultural inputs from PASPs was positively correlated with self-reported increases in customers' production. Of those 75 that purchased inputs from their PASP for the first time, 82.7% (62) reported an increase in their production from the previous season. Several customers attributed this increase to high-quality seeds and fertilizer, as well as planting guidance supplied by the PASP – indicating that the inputs and services offered by PASPs filled some gap in either the material or information supply lines.[10]

## Marketing and differentiation from competitors

### *PASPs' market research and competitors*

### Linking PASPs to customers

The customers interviewed first encountered their PASP in several ways. About 29.1% (68) of customer respondents said they had first encountered their PASP via another customer's reference, while 24.8% (58) were SILC members whose PSP was their local PASP. Many other customers (46.1%, or 102) either did not recall, or did not explain how they first encountered their PASP. These results vary greatly by country:

- In Rwanda, customer references account for 70.9% (61) and PSP connections for 2.3% (2) of first encounters
- In Senegal, it is nearly the reverse: 4.6% (4) of customers encountered their PASP *via* customer references, while 59.8% (52) stated that their PASP was their SILC PSP.
- In Guatemala, 88.5% (54) of respondents encountered their PASP first neither via SILC nor customer references, and PSP connections accounted for just 6.6% (4) and customer references 4.9% (3) of first encounters with PASPs.

[10] Other commonly cited reasons were good weather and planting more land – indicating that PASPs' inputs were not the only cause of increased production among customers who bought from their PASP for the first time in 2020.

### PASPs' market research to determine product and service offerings

Of PASPs surveyed, 74.6% (47) conducted market research to evaluate new products to offer during the most recent planting or campaign season (Table 11). Of the 16 PASPs that did not conduct market research, 37.5% (6) did not need to do so, as they did not offer new products. The share of PASPs who conducted market research varied by country: 94.8% (7) of Senegalese and 73.3% (22) of Rwandan PASPs conducted market research, while just 50% (7) of Guatemalan PASPs did the same.

*Table 11: Tabulation of Market Study Implementation and Presence of Competition, by Country*

| **Did you conduct market research about new products that you provided last season?** | **Are there other agro-dealers, community agents, or input suppliers in your area?** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | **GT** | | | **RW** | | | **SN** | | |
| | **No** | **Unsure** | **Yes** | **No** | **Unsure** | **Yes** | **No** | **Unsure** | **Yes** |
| No | **3** | 0 | 0 | 0 | 0 | **7** | 0 | 0 | 0 |
| No New Products | **4** | 0 | 0 | 0 | 0 | **1** | 0 | 0 | **1** |
| Yes | **5** | **1** | **1** | **1** | 0 | **21** | **2** | 0 | **16** |

The difference across countries in the shares of PASPs who conducted market research may be partly explained by a lack of competition. Most (85.7%, or 12) Guatemalan PASPs reported having no input supplier competition in their area, compared to just 3.3% (1) of Rwandan, and 10.5% (2) of Senegalese PASPs (Table 12).

*Table 12: Tabulation of PASP Competitors*

| **Country** | **myAgro** | **OneAcre Fund** | **Tubura** | **Other agents in the market** | **Other agro-dealers** | **Other paravets/ veterinary services** |
|---|---|---|---|---|---|---|
| GT | n.a. | n.a. | n.a. | 0 | 1 | 0 |
| RW | | 9 | 28 | 8 | 16 | 6 |
| SN | 17 | n.a. | n.a. | 12 | 9 | 0 |

Almost all PASPs reported that the market research they conducted influenced their decision-making regarding adoption of new product and service offerings. Of the 47 PASPs that conducted market research, 97.9% (46) stated that their market research had influenced their decision on which new products to offer. Furthermore, of those that conducted market research, 95.7% (45) stated that there was a difference in the inputs and services they provide when compared to their competition – indicating that they believed they were filling an existing market gap.

### *Farmers' perception of PASP advantage*

Most customers who bought inputs from PASPs listed more than one reason for choosing the PASP over alternative vendors. Fully 73.5% (172) stated that the PASP offered better service than other vendors, while 54.7% (128) thought the PASP's service convenient, and 52.6% (123) thought the PASP offered better prices (Table 13).

*Table 13: Cited Reasons to Buy from PASP*

| Why bought from PASP | N | % |
|---|---|---|
| Convenience | 128 | 54.7 |
| Better prices | 123 | 52.6 |
| Better service | 172 | 73.5 |
| More appropriate types | 133 | 56.8 |
| More appropriate quantities | 93 | 39.7 |
| Don't know what competition is | 1 | 0.4 |
| Other | 28 | 12.0 |

Many customers listed multiple reasons to explain their decision to buy from their PASP rather than other vendors. Almost 10% (23) thought that the PASP offered better convenience, prices, and services; and more appropriate input types and quantities. Another 9.4% (22) listed convenience, better prices, and better service, while 6.4% (15) included these advantages along with more appropriate input types (Table 14).

*Table 14. Why Bought from PASP – Unique Reason Combinations (for which N responses ≥ 10)*

| Convenience | Better prices | Better service | More appropriate types | More appropriate quantities | Other | N | % |
|---|---|---|---|---|---|---|---|
| X | X | X | X | X | | 23 | 9.8 |
| X | X | X | | | | 22 | 9.4 |
| X | | X | X | X | | 21 | 9 |
| | | X | | | | 16 | 6.8 |
| X | X | X | X | | | 15 | 6.4 |
| | | X | X | | | 13 | 5.6 |
| X | X | X | | X | | 11 | 4.7 |
| X | | | | | | 10 | 4.3 |
| | | | X | | | 10 | 4.3 |
| | | | | | X | 10 | 4.3 |

Irrespective of whether PASPs offer different products and services from their competitors, customers thought that the PASPs offered advantages in terms of convenience, prices, and services. Nevertheless, 56.8% (133) of customers did think that the PASPs offered more appropriate types of inputs and services than other vendors, indicating that PASPs offer products and services – including high-quality fertilizers and technical instruction on use – that their customers perceive as different from those sold by their competitors.

### *Gender inclusion in PASP marketing strategies*

Over 80% (50) of PASPs reported employing gender-conscious approaches to marketing inputs. All Guatemalan and 86.7% of Rwandan PASPs considered gender in their approach, while just 57.9% (11) of Senegalese PASPs did so (Table 15).

*Table 15. PASPs' Customized Gender Approach by Country*

| As a PASP, do you customize your approach to sell inputs and services to women? | Country | | | |
|---|---|---|---|---|
| | GT | RW | SN | Total |
| No | 0 | 4 | 8 | 12 |
| % | 0 | 13.3 | 42.1 | 19.4 |
| Yes | 13 | 26 | 11 | 50 |
| % | 100 | 86.7 | 57.9 | 80.7 |
| **Total** | **13** | **30** | **19** | **62** |

Gender-sensitive marketing strategies generally yielded PASPs new female customers. Of those PASPs who adapted their marketing strategies to appeal to women, 92% (46) reported that their approach increased the number of female customers who purchased from them (Table 16).

*Table 16. Gender-sensitive marketing and increase in female customers*

| | Has your customized approach increased the number of female customers that you have? | |
|---|---|---|
| **Do you customize your approach as a PASP to sell inputs and services to women?** | **% Yes (N)** | **% No (N)** |
| Yes | 92 (46) | 8 (4) |

However, when PASPs were asked to explain how they adapted their marketing strategies for inputs and services to women, the results became less certain. Just 44% (22) of PASPs detailed strategies that were clearly *gender-sensitive* and related to their work as PASPs; another 30% (15) listed *SILC-related* strategies, indicating that they relied on their work as SILC PSPs with majority-women SILCs to market their PASP inputs and services to women; and 26% (13) gave *uninformative responses*, so their gender-sensitive strategies could not be evaluated. As such, it is unclear what share of PASPs truly adopted gender-sensitive marketing strategies. The share may be lower than that reported by the PASPs' own answers.

It is further unclear how much of a difference gender-sensitive marketing makes in attracting new female customers. Indeed, while 86.4% (19) of those PASPs whose responses were coded as *gender-sensitive* reported that their strategy increased the number of female customers they had, *all* PASPs (15) whose responses were coded as *SILC-related* reported the same – as did 91.7% (12) of the PASPs whose responses were *uninformative* (Table 17). It may be that some PASPs who gave uninformative responses to the interviewers could describe a gender-sensitive strategy with further probing, thus supporting the value of gender-sensitive marketing adaptations; or that other factors influenced increases in the number of women who bought from these PASPs.

*Table 17. Type of gender-sensitive marketing strategy and if approach increased female customers*

| Has your customized approach increased the number of female customers that you have? | Type of Approach detailed by PASP response in survey | | | |
|---|---|---|---|---|
| | Gender Sensitive | SILC-related | Uninformative response | Total |
| No | 3 | 0 | 1 | 4 |
| % | 13.64 | 0 | 8.33 | 8.00 |
| Yes | 19 | 15 | 12 | 46 |
| % | 86.36 | 100 | 91.67 | 96.00 |
| **Total** | **22** | **15** | **13** | **50** |

Most customers reported that their PASP had discussed their needs with them prior to them placing their orders – and PASPs did so for both men and women customers: 84.8% (89) of female customers reported that the PASP discussed their needs and consulted with them before they purchased, rather than just selling what is they initially requested, and 76% (98) of male customers said the same (Table 18).

*Table 18: PASP consultations with customers by customer gender and country*

| **Did your local PASP just sell you what you asked for or did they discuss with you on your needs to help you choose?** | **Country** | | | | | |
|---|---|---|---|---|---|---|
| | **GT** | | **RW** | | **SN** | |
| | **Male** | **Female** | **Male** | **Female** | **Male** | **Female** |
| Discussed my needs and helped me choose | 24 | 30 | 43 | 40 | 31 | 19 |
| Sold me just what I asked for | 3 | 4 | 1 | 2 | 27 | 10 |

## PASPs' sales of inputs and services

### *PASPs' most popular inputs and services last season*

In Senegal and Rwanda, the most frequently purchased inputs were fertilizer (NPK 15 15 15, DAP, Urea, and manure), seeds (millet, maize, tomato, potato, beans), and banana suckers. In addition, three PASPs in Senegal included trainings among their most popular services, with one including SILC training. In Guatemala, popular products and services centered around animal (poultry) husbandry, and included vaccines, vitamins, anti-parasite and antibiotic medicines, pesticides, and disinfectants – although three PASPs mentioned fertilizers among their most popular inputs (Table 19).

*Table 19. PASPs' three most popular inputs and services this last season by country*

| | **Input** | **N** | | **Input** | **N** | | **Input** | **N** |
|---|---|---|---|---|---|---|---|---|
| **SN** | NPK 15 15 15 | 10 | **RW** | Maize | 19 | **GT** | Vaccines[11] | 11 |
| | DAP | 10 | | Vegetable seeds[12] | 16 | | Vitamins | 6 |
| | Seeds | 9 | | DAP | 15 | | Fertilizer | 3 |
| | Fertilizer | 7 | | Urea | 13 | | Anti-parasites | 2 |
| | Urea | 7 | | Organic fertilizer (manure or compost) | 6 | | Antibiotics | 2 |
| | Training | 3 | | Banana suckers | 3 | | Poisons | 1 |
| | SILC training | 1 | | | | | Disinfectants | 1 |

### *Customers' purchases from PASPs*

Farmer purchases varied between Guatemalan customers and their peers in Rwanda and Senegal. Of all product offerings PASPs provided, fertilizer sales were most frequent, with 75% (177) of customers purchasing fertilizer. This demand existed largely in Rwanda and Senegal, where 86.21% (75) and 100% (88) of customers, respectively, purchased fertilizer. Meanwhile, most Guatemalan customers raised poultry, so worked with paravet PASPs who did not sell fertilizer. However, of the 23% (14) of Guatemalan customers who said they farmed land, all bought fertilizer from a PASP (Table 20).

[11] Triple Aviar, Newcastle, smallpox (*viruela*), and bronchitis.
[12] Including tomatoes and beans, as well as seed potatoes.

*Table 20. Fertilizer Purchases by Country*

| Purchased Fertilizer | Country | | | |
|---|---|---|---|---|
| | GT | RW | SN | Total |
| No | 47 | 10 | 0 | 57 |
| % | 77 | 11.6 | 0 | 24.4 |
| Yes | 14 | 76 | 87 | 177 |
| % | 23 | 88.4 | 100 | 75.7 |
| Total | 61 | 86 | 87 | 234 |

Seeds, vaccinations, and other animal treatments were purchased from PASPs by 34.8% (82), 20.7% (49), and 18.6% (44) customers interviewed, respectively. Seeds were purchased exclusively in Africa, with 85.1% (74) of Rwandan and 9.1% (8) of Senegalese customers interviewed purchasing some variety of seed. In contrast, animal services were purchased solely by Guatemalan customers – many of whom worked with paravet PASPs – typically in combination: 80.3% (49) purchased vaccinations and 72.1% (44) purchased non-vaccination animal treatment.

*Table 21: Seed, vaccination, and non-vaccine animal treatment purchases by country*

| Product Purchased | Country | | | |
|---|---|---|---|---|
| | GT | RW | SN | Total |
| **Seeds** | | | | |
| No | 61 | 12 | 79 | 152 |
| % | 100 | 14.9 | 90.9 | 65 |
| Yes | 0 | 74 | 8 | 82 |
| % | 0 | 85.1 | 9.1 | 35 |
| Total | 61 | 86 | 87 | 234 |
| **Animal vaccinations** | | | | |
| No | 12 | 86 | 87 | 185 |
| % | 19.7 | 100 | 100 | 79.1 |
| Yes | 49 | 0 | 0 | 49 |
| % | 80.3 | 0 | 0 | 20.9 |
| Total | 61 | 86 | 87 | 234 |
| **Non-vaccine animal treatment** | | | | |
| No | 17 | 86 | 87 | 190 |
| % | 27.9 | 100 | 100 | 81.2 |
| Yes | 44 | 0 | 0 | 44 |
| % | 72.1 | 0 | 0 | 18.8 |
| Total | 61 | 86 | 87 | 234 |

### *Customers' purchases from non-PASP vendors*

Farmers reported purchasing inputs from other sources, though in lower numbers compared to purchases from PASPs. A frequency table of inputs purchased from non-PASP suppliers (Table 22) shows a similar distribution, with a notable exception of training: only one customer reported purchasing training from a non-PASP vendor, compared to the 19 who purchased from a PASP.

*Table 22. Inputs bought from non-PASP vendors*

| Input bought from non-PASP vendor | Customers who bought | % of customers N=234 |
|---|---|---|
| Fertilizer | 76 | 32.5 |
| Seeds | 30 | 12.8 |
| Vaccinations | 23 | 9.8 |
| Non-Vaccine Animal Treatments | 22 | 9.4 |
| Other | 19 | 8.1 |
| Pesticides | 18 | 7.7 |
| Farming Equipment | 3 | 1.3 |
| Seedlings | 2 | 0.8 |
| Animals | 2 | 0.8 |
| Trainings | 1 | 0.4 |
| Market Linkages | 1 | 0.4 |

Table 23 shows the cross-tabulation of the number of customers who purchased inputs from a PASP as compared to purchases from other sources, by country. For fertilizer, the 14 customers in Guatemala who farmed land bought exclusively from a PASP. Rwandan customers heavily favored PASPs when purchasing fertilizer, with 82.9% (63) of those buying fertilizer, buying it from a PASP exclusively. Senegalese customers who reported purchasing fertilizer from a PASP, did so less exclusively, with 63.2% (55) of respondents purchasing from both a PASP and from another source.

While no Guatemalan customers bought seeds from PASPs, 3.3% did purchase seeds from another source. In Rwanda, PASP-exclusive buyers comprised 77% (57) of seed-purchasing customers, with a further 23% (17) purchasing from both PASPs and another source. In sum, 97.4% of Rwandan customers who bought seeds, bought at least some from a PASP. Meanwhile, just 47.1% (8) of Senegalese customers who bought seeds, bought them from PASPs.

Most Guatemalan customers bought animal vaccinations from paravet PASPs. Fifty-six percent (28) of Guatemalan customers bought vaccinations exclusively from PASPs, with a further 42% (21) buying vaccinations from both their local PASP and another supplier. Guatemalan PASPs sold vaccinations to 98% (49) of the Guatemalan customers interviewed in the study. While there were no paravet PASPs in Rwanda or Senegal, one Rwandan customer did report buying animal vaccines from another source. The trends are similar for non-vaccine animal treatments, where PASPs reached 72% (44) of customers surveyed in Guatemala, but none in either Rwanda or Senegal. Similarly to vaccinations, three Rwandan customers reported non-vaccine animal treatment purchases from non-PASP vendors, while Senegalese customers did not buy these services.

*Table 23: PASP and Non-PASP Input Purchases Disaggregated by Country*

| **Fertilizer** | | | | | | |
|---|---|---|---|---|---|---|
| **Purchased Fertilizer from a PASP** | **Purchased Fertilizer from Another Supplier** | | | | | |
| | **GT** | | **RW** | | **SN** | |
| | **No** | **Yes** | **No** | **Yes** | **No** | **Yes** |
| No | 47 | 0 | 3 | 8 | 0 | 0 |
| Yes | 14 | 0 | 63 | 12 | 32 | 54 |
| **Seeds** | | | | | | |
| **Purchased seeds from a PASP** | **Purchased Seeds from Another Supplier** | | | | | |
| | **GT** | | **RW** | | **SN** | |
| | **No** | **Yes** | **No** | **Yes** | **No** | **Yes** |
| No | 59 | 2 | 10 | 2 | 70 | 9 |
| Yes | 0 | 0 | 57 | 17 | 8 | 0 |
| **Animal vaccinations** | | | | | | |
| **Purchased vaccinations from a PASP** | **Purchased Vaccines from Another Supplier** | | | | | |
| | **GT** | | **RW** | | **SN** | |
| | **No** | **Yes** | **No** | **Yes** | **No** | **Yes** |
| No | 11 | 1 | 85 | 1 | 87 | 0 |
| Yes | 28 | 21 | 0 | 0 | 0 | 0 |
| **Non-vaccine animal treatments** | | | | | | |
| **Purchased non-vaccine animal treatments from PASP** | **Purchased Non-Vaccine Animal Treatments from Another Supplier** | | | | | |
| | **GT** | | **RW** | | **SN** | |
| | **No** | **Yes** | **No** | **Yes** | **No** | **Yes** |
| No | 17 | 0 | 83 | 3 | 87 | 0 |
| Yes | 25 | 19 | 0 | 0 | 0 | 0 |

### *PASPs' perceptions of changes in demand from the previous planting or campaign season*

Across the three countries, 82.5% (52) of PASPs reported greater demand for their most popular offerings during the most recent planting season or vaccination campaign, than during the previous season or campaign – an increase reported by 93.3% (28) of PASPs in Rwanda, 89.5% (17) in Senegal, and 50% (7) in Guatemala (Table 24).

*Table 24. Increase in Demand by Country*

| **Was there more demand for any of these products this past agricultural season or vaccination campaign than the previous one?** | **Country** | | | |
|---|---|---|---|---|
| | **Guatemala** | **Rwanda** | **Senegal** | **Total** |
| No | 6 | 2 | 0 | 8 |
| % | 42.9 | 6.7 | 0 | 12.7 |
| Unsure | 1 | 0 | 2 | 3 |
| % | 7.1 | 0 | 10.5 | 4.8 |
| Yes | 7 | 28 | 17 | 52 |
| % | 50 | 93.3 | 89.5 | 82.5 |
| Total | 14 | 30 | 19 | 63 |

We compared PASP perceptions of demand with changes in production as reported by customers. Under the assumption that greater agricultural production would necessitate greater demand for inputs, the lack of increased demand perception in Guatemala could be explained by lower production. However,

we see that 65.6% (40) of customers in Guatemala reported an increase in their production compared to last year. While this is slightly lower than the rates reported in Rwanda and Senegal, at 75.3% (64) and 80.7% (71) respectively, it is still a significant proportion reporting production increases (Table 25).

*Table 25. Changes in agricultural production by country*

| Would you say your agricultural or animal production last season or campaign...? | Country | | | |
|---|---|---|---|---|
| | Guatemala | Rwanda | Senegal | Total |
| Decreased | 11 | 8 | 16 | 35 |
| % | 18 | 9.4 | 18.4 | 15 |
| Increased | 40 | 64 | 70 | 174 |
| % | 65.6 | 75.3 | 80.5 | 74.7 |
| Remained the same | 10 | 13 | 1 | 24 |
| % | 16.4 | 15.3 | 1.1 | 10.3 |
| Total | 61 | 85 | 87 | 233 |

### *Effects of COVID-19 on customers' purchases of agricultural inputs and services in 2020*

Overall, 61.54% (144) of customers said that Covid-19 had affected their financial capacity to buy agricultural inputs in 2020. Majorities in Guatemala and Senegal said that Covid-19 had affected their ability to buy, while most respondents in Rwanda (63.95% or 55 customers) said that the pandemic had not (Table 26). It is not clear why results were different in Rwanda compared to the other two countries, but the fact that the Rwandan customers had received their inputs in January or February 2020, prior to the full lockdown imposed on 22 March 2020. Indeed, by the time the Rwandan lockdown was imposed, the farmers only needed advisory services, and the project encouraged the Rwandan PASPs to send weekly check-in text messages to their customers until the lockdown was lifted in June 2020 – coinciding with the harvest period, at which point the PASPs helped their customers to find markets. From September through mid-October 2020, there was no total lockdown in Rwanda, which permitted the PASPs to visit and support their customers. In addition, the government of Rwanda permitted the transportation of agricultural inputs and produce even during the lockdown.[13]

*Table 26. Whether COVID-19 affected customers' financial capacity to buy inputs in 2020, by country*

| Country | % No (N) | % Yes (N) |
|---|---|---|
| GT | 11.5 (7) | 88.5 (54) |
| RW | 64 (55) | 36.1 (31) |
| SE | 32.2 (28) | 67.8 (59) |
| Total | 38.5 (90) | 61.5 (144) |

Those who indicated that COVID-19 had affected their ability to buy agricultural inputs in 2020, gave several reasons for the effects. Their reasons included:

- Limited mobility to and from markets
- Harder to get money together for purchases
- Lack of work for wage income
- Scarcity of food for household purchases
- Delay in delivery of seeds
- Could not sell their products or could not sell them for a good price
- Market closures
- Difficult to repay loan installments, and

[13] Information on the Rwandan response to COVID-19 was provided by Jackson Kayinamura (CRS Rwanda), not by the surveys whose results are discussed in this report.

- Lower supplies of fertilizer due to market closures.

### *New inputs and services of interest to customers and PASPs*

While PASPs offered a range of agricultural inputs to their customer or animal husbandry customers, both PASPs and their customers listed additional products that they would like their PASPs to offer, that currently are not offered. When asked if they would like the PASPs to offer any additional products or services that they do not currently offer, 53.7% (124) of customers said yes (Table 27).

*Table 27. Are there any new products that you would like the PASPs to sell, that they currently do not?*

| % No (N) | % Unsure (N) | % Yes (N) |
|---|---|---|
| 32 (74) | 14.3 (33) | 53.7 (124) |

Of those 124 customers who said yes, the most common requests were quality seeds and fertilizer (presumably of different types from those offered by PASPs), agricultural equipment, and processed chicken feed. Some respondents requested reduced prices for seeds and fertilizer. Those who asked for specific types of fertilizer mentioned DAP and Urea, and two customer respondents requested trainings on fertilizer use (

Table 28).[14]

*Table 28. Most common new products requested by customers*

| Mention | N |
|---|---|
| Seeds not currently available, particularly ground nuts in Senegal | 44 |
| Agricultural equipment (including buying or renting tractor services) | 15 |
| Fertilizer (including DAP, Urea, and two requests for trainings on fertilizer) | 14 |
| Pesticides | 8 |
| Providing linkages for market sales or to microfinance institution for loans | 3 |

### Inputs and services that PASPs said customers have asked them to offer

When asked, 43% (6) of PASPs in Guatemala, 66.7% (20) in Rwanda, and 100% (19) in Senegal said that they would like to offer additional products to their customers. When asked what products their customers have asked them to provide that they currently do not provide, PASPs' lists varied by country, as is to be expected.

In Guatemala, PASPs reported being asked for new brands or types of vitamins, antibiotics, vaccines, natural medicines for poultry, chicken marketing trainings, and botanical pesticides. In Rwanda, customers' requests to PASPs included pesticides, farming material, injections to treat livestock, watering machines, as well as various types of seeds. And in Senegal, customers have asked PASPs to provide seeds for sorghum, hibiscus, and okra; herbicides for pre-emergence groundnut production; and seed planters and other equipment (Table 29).

[14] While DAP and Urea were sold by PASPs, in Senegal Urea orders were not delivered, and there may be limited availability of DAP in some areas.

*Table 29. Inputs and services PASPs' customers have asked them to provide, that they currently do not*

| Guatemala | Rwanda | Senegal |
|---|---|---|
| Other types, brands of vitamins | Pesticides | Sorghum, groundnut |
| Antibiotics | farming material | Machines and agricultural equipment, including seed planters |
| Vaccines, vitamins for pigs and processed chicken feed | Seeds | Seeds: okra, eggplant, onion, cabbage, garden crops |
| Natural medicines for poultry, training for families on selling poultry and establishing a market | Watering cans | Herbicide (for pre-emergence groundnut production) |
| Pesticides | Lime fertilizer | Pesticides |
| | Seed potatoes | Marketing assistance |
| | injections to treat livestock | |
| | Peas | |
| | Finger millet (*Eleusine coracana)* | |
| | Wheat | |

While the customers' and PASPs' lists are different, there are commonalities: different types of, or cheaper, fertilizers and seeds; machines in Rwanda and Senegal; and antibiotics, vitamins, and other animal husbandry necessities in Guatemala.

### *PASPs support for customers' agricultural sales*

Most of the customers interviewed expected to sell at least some of their agricultural production: 72.65% (170) reported selling or planning to sell at least some of their agricultural (or animal) production this year. Just 26.92% (63) said they did not plan to sell any of their agricultural production. Only one respondent did not answer the question. Disaggregating by SILC membership, majorities of both SILC members (80.77%, or 105) and non-members (61.76%, or 63) planned to sell at least some of their agricultural production.

Of those who planned to sell some of their production, 11.8% (20) said they planned to sell all of it, 41.2% (70) planned to sell more than half, and 24.7% (42) about half.

Of those 170 who planned to sell at least some of their agricultural produce, 73.5% (125) did not plan to get help with identifying markets for sales from their PASP. Farmers who planned to engage PASPs' help with agricultural sales mostly expected PASPs to furnish them with links to potential individual clients, new market linkages, and knowledge of the prices in different markets. The main agricultural products that customers expect PASPs to help them sell were maize (the most common response), beans, soybeans, tomato, garlic, carrots, poultry and coffee. Of the 24.1% (41) who did plan to use PASP services in their sales – 85.4% (35) of whom were in Rwanda – 82.9% (34) thought that the PASP would help them get a better price.

### Customers' overall judgment of PASPs

Most customers were satisfied with their PASP's performance. Regarding whether the PASP was easy to reach during the input ordering process, fully 96.6% (226) of customers interviewed said yes; 94.4% (221) said their PASP had explained how to use the input, 78.6% (184) were very satisfied with the input delivery, 95.7% (224) said that their inputs were delivered on time, and 97.4% (228) said that the input delivery was convenient for them. Finally, when asked whether they would recommend their PASP's services to a friend or neighbor, all but three respondents (98.7%) said yes.

### *Gender difference in customers' satisfaction with PASP inputs and services*

When customers were asked about how well PASPs met their expectations, members of both genders they gave answers that were largely positive. Across the three countries, 37.8% (88) of customers reported PASPs exceeded expectations, with a further 61% (142) stating that PASPs met their expectations. Results are consistent across the genders: 59.7% (77) of male customers said that PASPs met their expectations, as did 62.5% (65) of female customers; 38.8% (50) of male customers had their expectations exceeded, and 36.5% (38) of female customers said the same (Table 30).

*Table 30: Customer satisfaction by country and gender*

| **Did the inputs and/or services you received from your local PASP exceed, meet or fail to meet your expectations?** | **Country** | | | | | |
|---|---|---|---|---|---|---|
| | **Guatemala** | | **Rwanda** | | **Senegal** | |
| | **Male** | **Female** | **Male** | **Female** | **Male** | **Female** |
| Exceeded | 20 | 21 | 12 | 10 | 18 | 7 |
| Fail to meet | 1 | 1 | 1 | 0 | 0 | 0 |
| Met | 6 | 12 | 32 | 31 | 39 | 22 |

## Financial and logistical sustainability of the PASP model (and effects of COVID-19)

### *PASP earnings*

PASPs typically do not earn enough through PASP input and service sales to cover all their basic expenses. Of those surveyed, only 4.8% (3) of PASPs – all of whom are Senegalese – responded that PASP earnings were sufficient, while the remaining 95.2% (60) of PASPs said they needed to supplement with income from other sources. PASPs do typically have other income streams; 89% (17) of Senegalese, 93.3% (28) of Rwandan, and 100% (14) of Guatemalan PASPs indicated that they had alternate income-generating activities (Table 31).

*Table 31: Whether PASP Income Covers Basic Living Expenses for the Year, by Country*

| **Country** | **% Covers Basic Expenses (N)** | **% Need to Supplement (N)** |
|---|---|---|
| GT | 0 (0) | 100 (14) |
| RW | 9 (0) | 100 (30) |
| SN | 15.8 (3) | 84.2 (16) |
| ***Total*** | ***4.8 (3)*** | ***95.2 (60)*** |

### *PASPs' future plans*

While most PASPs said they did not earn enough money from PASP work to cover their basic living expenses – and a significant minority said they did not earn enough to continue working as PASPs in future planting seasons or vaccination campaigns – most said they *would* continue to work as PASPs in future. Indeed, 41.3% (26) of PASPs said they did not earn enough money to continue their PASP work in future planting seasons or vaccination campaigns, while 47.6% (30) said they did earn enough to continue their PASP work (Table 32).

*Table 32. Whether PASP earns enough income to continue working as a PASP in future planting or vaccination campaign seasons*

| Country | % No (N) | % Unsure (N) | % Yes (N) | Total N |
|---|---|---|---|---|
| Guatemala | 43 (6) | 14 (2) | 43 (6) | 14 |
| Rwanda | 57 (17) | 13 (4) | 30 (9) | 30 |
| Senegal | 16 (3) | 5 (1) | 79 (15) | 19 |
| ***Total*** | ***41.3 (26)*** | ***11.1 (7)*** | ***47.6 (30)*** | ***63*** |

Nevertheless, almost all – 96.8% (61) – PASPs said they *would* continue their PASP work (Table 33), irrespective of whether they had earned enough to continue to do so. This apparent contradiction may be due to the fact that 54% of PASPs estimated that they earned more money last season than in the previous season, and expect future gains – and even the 53% (23) of Senegalese PASPs who earned less during the most recent planting season than they had during the previous season, may expect their earnings to increase again once the COVID-19 pandemic recedes: According to one Senegalese PASP, PASP work "is a profession that promises earnings, even if they are lower this year with the pandemic."

*Table 33. PASPs' planned continuity by Country*

| | Will continue to work as a PASP | | |
|---|---|---|---|
| **Country** | **% No (N)** | **% Yes (N)** | **Total N** |
| Guatemala | 7.1 (1) | 92.9 (13) | 14 |
| Rwanda | 0 (0) | 100 (30) | 30 |
| Senegal | 5.3 (1) | 94.7 (18) | 18 |
| ***Total*** | ***3.2 (2)*** | ***96.8 (61)*** | ***63*** |

These reduced PASP earnings may, however, be due to the impact of Covid-19, which damaged the PASPs' clients' agricultural production and reduced demand for PASP products and services. Containment restrictions during the pandemic further reduced PASPs' ability to reach their customers for input sales and service delivery. Another possible explanation may be that PASPs do earn enough income from PASP work to continue the work and value their role as a service; however, we lack the data to make empirical assertions.

Indeed, PASPs are motivated in their PASP work by more than just income. When those who did not earn enough money to continue working as PASPs, but said they would continue to do so anyway, were asked why, they gave reasons that included love of the work, feelings of responsibility to their communities, and pride in the trust they have earned among their neighbors. One Senegalese PASP said they would continue to work due to their "love of the work, and of collaboration with the population." A Rwandan PASP said, "Farm inputs are always needed by farmers, and I would not like them to lose trust in me." And a Guatemalan PASP said that their PASP work "is a benefit as much for me as for my community." In addition, income from other sources can help offset limited earnings from PASP work: One Guatemalan PASP said that they would continue their work "because I do various jobs to complement my expenses." Finally, a Senegalese PASP appeared to enjoy the challenge of PASP work, saying that "the difficulties encountered make me believe that the rest will be better."

## Future Projects

### The use of e-PASP for tracking customers and orders

Though approval for e-PASP was overall high, usage varied by country. Generally, perception and utilization of e-PASP for were lower in Guatemala than in Rwanda and Senegal. While all PASPs stated that the app was useful for registering clients, fewer than half of Guatemalan PASPs said they had

registered any clients at all. In contrast, over 90% of Senegalese and 80% of Rwandan PASPs had registered at least half of their customers in e-PASP (Table 34).

*Table 34. Share of clients registered via PASP, by country (N and % of PASPs responding)*

| Share of customers registered in e-PASP | Country | | | |
|---|---|---|---|---|
| | Guatemala | Rwanda | Senegal | Total |
| All | 1 | 6 | 5 | 12 |
| % | 7.1 | 20 | 26.3 | 19.1 |
| Most | 1 | 12 | 12 | 25 |
| % | 7.1 | 40 | 63.2 | 39.7 |
| About Half | 2 | 8 | 2 | 12 |
| % | 14.3 | 26.7 | 10.5 | 19.1 |
| Less than Half | 2 | 4 | 0 | 6 |
| % | 14.3 | 13.3 | 0 | 9.5 |
| None | 8 | 0 | 0 | 8 |
| % | 57.1 | 0 | 0 | 12.7 |
| Total | **14** | **30** | **19** | **63** |

e-PASP functionalities tended to rate highly. PASPs unanimously agreed that registering clients was a useful feature. The app's functionality for tracking income and entering orders were also popular, with over 50% of PASPs rating them as important in all countries. The remaining functionalities had much lower support; while still polling favorably in Rwanda and Senegal, only half of Guatemalan PASPs agreed that they were useful (Table 35).

*Table 35. Most useful e-PASP functions, by country (N PASPs reporting that they find the function useful)*

| Country | Register customers | Register suppliers | Input orders | Track payments | Track income and profit |
|---|---|---|---|---|---|
| Guatemala | 14 | 7 | 9 | 7 | 11 |
| Rwanda | 30 | 24 | 30 | 25 | 28 |
| Senegal | 19 | 15 | 12 | 18 | 14 |
| **Total** | **63** | **46** | **51** | **50** | **53** |

Most PASPs indicated willingness to pay a fee to continue to use the e-PASP application, with 70% and 100% of PASPs interviewed in Rwanda and Senegal, respectively, indicating that they would be willing to pay a monthly fee of approximately $1 USD per month. Despite lower app usage estimates, 64.3% of Guatemalan PASPs indicated that they would be willing to pay for the service in the future (Table 36).

*Table 36. Willingness to pay for e-PASP, by country*

| Country | % No (N) | % Unsure (N) | % Yes (N) | Total N |
|---|---|---|---|---|
| Guatemala | 14.3 (2) | 21.4 (3) | 64.3 (9) | 14 |
| Rwanda | 3.3 (1) | 26.7 (8) | 70 (21) | 30 |
| Senegal | 0 (0) | 0 (0) | 100 (19) | 19 |
| **Total N** | **3** | **11** | **49** | **63** |

### *Feedback for potential e-PASP improvement*

When asked about what features could be improved, 19.05% (12) PASPs indicated that they were satisfied with e-PASP in its current state. The most frequent suggestions for improvement were, first, to reduce the quantity of information requested by the app when creating new orders, to make using the app less tedious for the PASPs. This suggestion was provided by 11.1% (7) of PASPs. Second, 11.1% (7) PASPs requested better data management and categorization within the app; specifically, the ability to access the data directly, to delete clients, and clarify categorization (such as allowing for multiple districts and separation of agriculture from livestock). Third, 6.35% (4) of PASPs stated that it would be useful for the app to communicate remaining balances and payment details to the PASPs' clients. Finally, 17.5% (11) of PASPs had technical difficulties using the app; and of these, four mentioned difficulties obtaining a cellular signal and another four – Guatemalan PASPs with older mobile phones – said that they had issues with their phone specifically.

## Formal certification's predicted effects on PASPs' businesses

PASPs indicated that formal certification would be valuable to their future operations: 82.8% (53) of PASPs thought that certification would help them to attract new clients, 71.4% (45) that it would help them provide more services to their community, and 69.8% (44) that certification would help them sell more products and services to the same customers. When prompted to explain why they thought certification would be beneficial, PASPs responded overwhelmingly that certification would increase their legitimacy and the level of trust between themselves and their clients.

*Table 37: PASP Responses on how Certification Would Make a Difference (Multiple Responses Possible)*

| Country | No difference | Sell more to same customers | Attract new customers | Provide more services to community | Improve partnerships with private sector |
|---|---|---|---|---|---|
| GT | 1 | 10 | 12 | 11 | 1 |
| RW | 2 | 22 | 25 | 21 | 22 |
| SN | 1 | 12 | 16 | 13 | 10 |
| **Total N (%)** | **4 (6.3)** | **44 (69.8)** | **53 (82.8)** | **45 (71.4)** | **33 (52.4)** |

Customer survey responses corroborate this finding. One-hundred-seventeen (49.8%) customers claimed that they would purchase more from a certified PASP (Table 38). When prompted, the primary reasons they gave were increased trust, communicated proof of the PASP's capacity and knowledge, and higher quality services.

*Table 38: Farmer's Predicted Purchase Change based upon whether PASP was Certified*

| | More | Same | Less | Unsure |
|---|---|---|---|---|
| **N** | 116 | 101 | 0 | 16 |
| **%** | 49.8 | 43.4 | 0 | 6.93 |

## Value of PASP Networks and Business Groups

Most PASPs said they were PASP network members – including all Senegalese PASPs (Table 39). Majorities of both women and men in Rwanda and Senegal said they were PASP network members (there were no women PASPs in Guatemala).

*Table 39: PASP Network Membership by Country and Gender*

| PASP is member of a PASP network | Country | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Guatemala | | Rwanda | | Senegal | | Aggregate | |
| | Male | Female | Male | Female | Male | Female | Male | Female |
| No | 3 | 0 | 5 | 4 | 0 | 0 | 8 | 4 |
| % | 21.4 | 0 | 26.3 | 36.4 | 0 | 0 | 20 | 36.4 |
| Yes | 11 | 0 | 14 | 7 | 15 | 4 | 40 | 11 |
| % | 78.6 | 0 | 73.7 | 63.6 | 100 | 100 | 80 | 63.4 |
| Total | 14 | 0 | 19 | 11 | 15 | 4 | 48 | 15 |

PASPs in all three countries stated that by being PASP network members, they achieved better price points for their inputs due to collective bargaining and/or cost sharing. Additional advantages included information dissemination, cross-training, and extension of intra-network credit, cited particularly in Rwanda and Senegal. When asked to list the disadvantages of PASP networks, 31.8% (20) of PASPs reported that they did not recognize any. Among those PASPs who did find disadvantages to network membership, 12.7% (8) PASPs mentioned dishonesty and non-payment from PASPs within the network; and fewer cited difficulties in holding meetings and agreeing with other PASP network members.

## SILC's relationship to PASPs' sales and customers' orders

### *Sources of financing for buying from PASPs*

Over 60% (79) of SILC-member customer respondents used SILC funds to purchase agricultural inputs or services – including 40% (52) who used only SILC share-out money, 16.9% (22) who used only SILC loans, and 3.8% (5) who used both SILC share-out and loan (Table 40).

*Table 40: SILC Fund use for input purchases*

| | Used SILC loan | |
|---|---|---|
| **Used SILC share-out** | No | **Yes** |
| No | 51 | **22** |
| % | 39.2 | **16.9** |
| **Yes** | **52** | **5** |
| **%** | **40** | **3.8** |

To explain why the remaining 39.4% (51) did not use SILC money to buy agricultural inputs from PASPs, representative responses included that there were other sources available, that SILC funds were reserved for other endeavors, or that SILC money was insufficient for their agricultural input needs.

Of those paid for inputs using SILC funds, 64.5% (49) paid in installments. Those 35.5% (27) of SILC members who used SILC funds for input purchases but did not pay in installments explained that their PASPs did not offer an installment option, as they could not buy wholesale inputs without being paid by their customers first.

### *PASP trends in working with SILC members and non-members*

Rwandan and Senegalese PASPs were more likely to sell to SILC members than were Guatemalan PASPs (
Table 41) – likely because twelve Rwandan and seventeen Senegalese PASPs were SILC PSPs, while just three Guatemalan PASPs were the same. Guatemalan PASPs were, furthermore, less likely than their

Rwandan and Senegalese counterparts to be aware of SILC activities: most of the Guatemalan PASPs stated that they were unaware of any SILCs in their sales areas.

While 29 PASPs in Rwanda and Senegal could leverage their SILC PSP work for PASP marketing and sales, most reached beyond their SILC groups to market their inputs and services. As Table 41 shows, just 25% (3) of the SILC-PSP PASPs in Rwanda and 18% (3) in Senegal sold inputs and services *mostly* to SILC members. Indeed, most SILC-PSP PASPs in those two countries sold to both SILC members and non-members *about equally*: 67% (8) in Rwanda and 71% (12) in Senegal. (Three other SILC-PSP PASPs – two in Senegal and one in Rwanda – sold inputs and services *mostly to non-members*.) In contrast, of the 18 non-PSP PASPs in Rwanda, fully 61% (11) sold inputs and services *mostly to non-members*, while 28% (5) sold to both members and non-members *about equally*, and just 11% (2) sold *mostly to SILC members*.

When asked about the advantages of working with SILC members, PASPs responded primarily that SILCs provide a wider customer base. Marketing to SILCs resulted in larger, more profitable orders; and SILCs were more trusted than other groups to provide timely payment. Most PASPs stated that they perceived no drawbacks to working with SILCs.

*Table 41: Estimate of share of inputs and services sold to SILC members, by country and SILC PSP status*

| Country | SILC PSP | % Both about equally (N) | % Mostly non-members (N) | % Mostly SILC members (N) | % Unsure (N) |
|---|---|---|---|---|---|
| Guatemala | No | 9 (1) | 64 (7) | 0 (0) | 27 (3) |
| | Yes | 100 (3) | 0 (0) | 0 (0) | 0 (0) |
| Rwanda | No | 28 (5) | 61 (11) | 11 (2) | 0 (0) |
| | Yes | 67 (8) | 8 (1) | 25 (3) | 0 (0) |
| Senegal | No | 50 (1) | 0 (0) | 50 (1) | 0 (0) |
| | Yes | 71 (12) | 12 (2) | 18 (3) | 0 (0) |
| **Overall** | **No** | **23 (7)** | **58 (18)** | **10 (3)** | **10 (3)** |
| | **Yes** | **72 (23)** | **9 (3)** | **19 (6)** | **0 (0)** |

These sales trends indicate that SILC groups and members are important sources of customers for those PASPs who are SILC PSPs, but they rarely (if ever) provide the *only* customers for PASPs. While PASPs who are SILC PSPs can take advantage of their work with SILC groups to market their agricultural inputs and services to members, they reach beyond SILC to appeal to other potential customers (possibly leveraging their SILC-affiliated networks in their marketing).

## Conclusion

The 2021 PASP annual survey results indicate that PASPs reach the last mile, provide customers with high-quality agricultural inputs – primarily fertilizer and seeds in Rwanda and Senegal; and animal vaccinations and other treatments in Guatemala – and are motivated to continue their PASP work in future planting or vaccination campaign seasons. While work remains to be done to consolidate the model, and further study is needed to understand how many PASPs continue to work once the project closes, and why; the PASP model appears to work, to be valued by PASPs and customers alike, and to be sustainable.

Lessons learned include:

### Last-mile outreach and sustainability of the PASP model

1. PASPs provide last-mile service to underserved and unserved customers. While a small minority of PASPs' customers in 2020 were first-time buyers of the inputs and services the PASPs sold,

the PASPs both (a) reached previously unserved customers and (b) secured the repeat customers that are necessary for the long-term sustainability of the PASP work.

2. PASPs provided several advantages to customers over non-PASP vendors, including better service and prices, and more appropriate types and quantities of inputs.
3. PASP work does not pay enough yet to be PASPs' sole income-generating activity, so most PASPs supplement their income with farming, petty trade, and SILC PSP work. Indeed, about half of the PASPs reported not earning enough money from the work to continue working as a PASP in future planting or vaccination campaign seasons. Nevertheless, all but two PASPs in the study expressed willingness to continue working as PASPs, highlighting how much they value their work and their sense of obligation to the customers they serve. While PASPs have multiple motivations for their work, PASPs trained and certified in future projects should be sure to have multiple income streams.
4. PASPs think that formal certification will help them to sell more inputs and secure better wholesale agreements, as certification helps build trust. Most of the PASPs' customers expressed willingness to buy just as much or more from their PASP, if their PASP were formally certified.

### PASP inputs, services, and marketing

5. PASPs' core inputs include fertilizer and (to a lesser extent) seeds in Rwanda and Senegal, and vaccinations and non-vaccine animal treatments in Guatemala.
6. Farmers have requested that PASPs expand their offerings to include inputs such as garden crops, seed planters, and a wider variety of seeds.
7. For the most part, PASPs consulted with their customers to help their customers determine what they needed to buy. There did not appear to be significant differences in this trend between men and women customers.
8. Most PASPs told interviewers that they had adapted their marketing strategies to appeal to women customers, and most of these reported that their adaptations had yielded more women customers. However, when asked to detail their strategies, several could not explain them, so further study is needed to understand if and how PASPs have adapted their marketing to increase their number of women customers.

### Links to SILC

9. For those PASPs who are certified SILC PSPs, SILCs are an important – but not the only – source for customers for agricultural inputs and services. Majority-female SILCs are the principal source for many PASPs' female customers. Many, but not all, SILC members interviewed in the study had used share-out or loan money to buy agricultural inputs or services from PASPs, but others found that they did not have enough money in SILC to use those sources for the purchases.
10. COVID-19 affected many customers' ability to buy agricultural inputs, and reduced their incomes by closing markets and preventing them from selling at the price points they desired.

### e-PASP

11. Most PASPs said that they found several functionalities of the e-PASP app useful, but it is unclear what share of their customers PASPs have registered in the app.
12. Most PASPs expressed willingness to pay a fee to continue to use the e-PASP app, but it remains to be seen how many continue to use the app once a paywall is erected.