I. RESEARCH THEMES

Mobile Payments

· How are payments beings currently in the avocado supply chain? Most Colombian avocados producers are paid for their harvest the following three ways:

1) **Cash:** Through this method, producers are paid a fixed rate (e.g. per kilo, or per ton) without differentiating the various qualities that be represented in their harvest. This is the most common payment method among small producers that a) do not have access to a formal bank account or bank branch, and/or b) produce very low-quality avocados. Most cash payments are made at the producer's farms when the intermediary/transporter receives the avocados from the producer. Typically, most cash transactions are informal, as they are not reported to tax authorities nor the Colombian Agricultural Institute (ICA).

2) **Direct Deposit or Check:** In contrast to cash, payments made through direct deposit or via a physical check require a greater level of formality. Through this method, the buyers a) deposit the agreed amount into the producer's checking account, or b) simply hands a physical check to the producer. Depending on the banking institution of the buyer and the producer, the deposit can take one to several business days to show up in the producer's bank account. On the other hand, if the payment is made by physical check, the producer will typically have to travel (20 – 50Km) to the nearest town to cash that check at the local bank branch. Since these transactions must go through a formal banking institution, the avocado buyers (e.g. intermediaries, processors, exporters) as well as the sellers (e.g. producers) must have a bank account that is typically led linked to a specific tax identification (e.g. Registro Único Tributario).

3) Advance: Through this method, the buyers (e.g. intermediaries, processors, exporters) pay the producers an *anticipo*—an advance representing a share (e.g. 40 to 50 percent) of the agreed amount. When the product is successfully sold abroad, the producers receive their remaining share. This payment can take one or two weeks to clear the producers' bank account. This method is more prevalent among middle and large avocado producers that are engaged either directly (e.g. through their own exporting operation) or indirectly (e.g. through a third party) in the export market. If their product is export-bound, producers –regardless of size—must have a 1) tax identification (e.g. Registro Único Tributario) as well as 2) be certified by the Instituto Colombiano Agropecuario (ICA). The same rules apply to the smallholder producers that supply avocadoes to exporters as well as intermediaries and medium/large producers engaged in exporting.

· How much is a typical transaction with a smallholder avocado farmer? On average, most smallholder avocado farmers in Colombia produce around 10 to 12 tons of avocados a year. In contrast to avocados in Mexico or in California, Colombian avocados are grown year-round. Typically, these farmers are paid around COP$2,400,000 to 3,000,000 (USD$800 to 1000) per ton of avocados.

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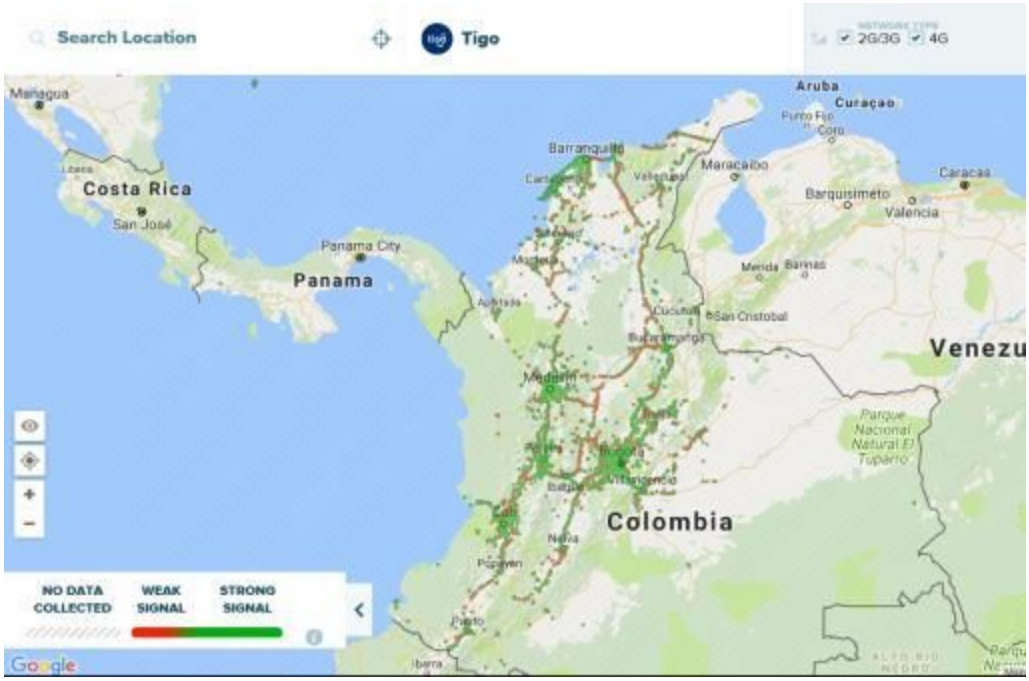
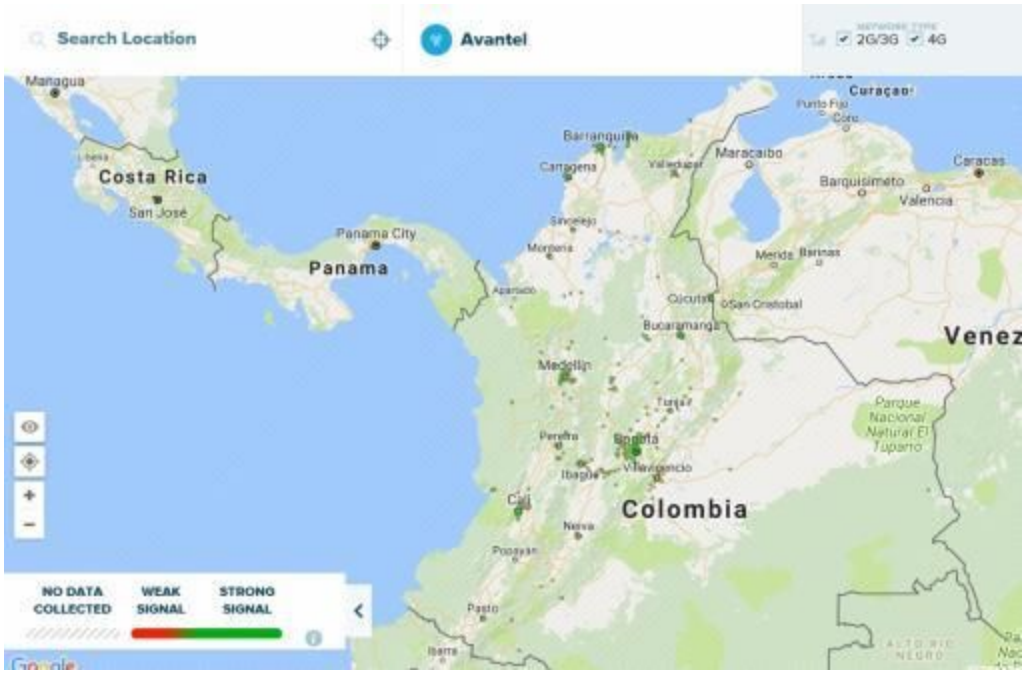
· Are smallholder avocado producer using mobile wallets for payment? If not, why not? Are there specific barriers to adoption? Most avocado producers are not using mobile

payments, let alone smartphones. The main barriers of mobile payment adoption are 1) lack of smartphone devices, 2) unreliable internet signal in rural areas, 3) limited experiences using smartphones, and 4) fear or lack of interest in information and communication technology, and 5) the unaffordability of data plans.

- **Which Mobile Network Operators (MNOs) are engaging our target areas? RBMóvil and Aval Pay operate in Colombia, what is their rural presence like? Is TIGO present? Are there others either present or planned?**While there is a diverse array of MNOs that operate across Colombia, there is only a few of them that have a significant market presence outside of the main urban areas or transport corridors. Currently, the operators with the best rural coverage (e.g. 2G, 3G, and 4G) are Claro, Movistar, Tigo y Avantel. Below is a coverage map for each of these MNOs: Source: Open Signal Even with these four operators, the rural coverage for 3G and 4G is still very limited. Due to the lack of 3G/4G network coverage, among other factors previously discussed, it is not rare for some smallholder farmers to have a conventional 2G phone with two (2) SIM Cards. This method allows them to have access to alternative MNO signals in case the default one is not strong enough to make/receive calls as well as send/receive SMS. In contrast to these four MNOs, Virgin and Empresa de Telecomunicaciones de Bogotá (ETB) are among the major operator with the weakest rural presence. With these factors in mind, it easy to see why mobile payment platforms— particularly those enabled with smartphones—have not taken off in rural Colombia. Here is a brief analysis of the major mobile payment (RBMovil) and mobile wallet (AvalPay) platforms in the Colombia and why they have not been as successful in the rural areas where smallholder farmers live and work:


Search Location
Claro
2G/3G
4G
Managua
Costa Rica
San José
Panama City
Panama
Barranquilla
Maracaibo
Curaçao
Caracas
Barquisimeto
Valencia
Mérida
Barinas
San Cristobal
Colombia
Parque Nacional Natural El Tuparro
NO DATA COLLECTED
WEAK SIGNAL
STRONG SIGNAL


Search Location
Tigo
2G/3G
4G
Managua
Aruba
Curaçao
Costa Rica
San José
Panama City
Panama
Barranquilla
Maracaibo
Caracas
Barquisimeto
Valencia
Mérida
Barinas
San Cristobal
Colombia
Parque Nacional Natural El Tuparro
NO DATA COLLECTED
WEAK SIGNAL
STRONG SIGNAL
Google



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RBMovil: In partnership with MasterCard Colombia, Redeban's RBMovil is one of the most used mobile payment platforms in Colombia. However, this solution is not prevalent in the remote rural communities where avocadoes are grown. For RBMovil to function, it requires users to have 1) a smartphone (e.g. Android, Blackberry or iPhone), 2) relieve internet access, as well as a formal commercial license affiliated to the local chamber of Commerce (e.g. *Cámara de Comercio*). Given the lack smartphone usage, internet connectivity as well as the high rates of informality among rural producers, many smallholder farmers are unable to make use of these mobile payments applications. It is also worth mentioning that RBMovil users must purchase a point-of-sale terminal (e.g. *datafono*) for a one-time fee of COP$49,000 + 19% IVA. To avoid a monthly operating fee, users must carry out a minimum daily transaction of COP$22,869 (+ 19% IVA). This daily transaction requirement is an impediment to smallholder farmers; many of which carry out sales transaction on a per-harvest basis (vs. a daily basis).

AvalPay: AvalPay is a mobile wallet application exclusive to the banking institutions affiliated to the Grupo Aval, such as: Banco de Bogota S.A, Banco de Occidente S.A, Banco Popular S.A, Banco AV Villas S.A. Many of the challenges of RBMovil are also applicable to AvalPay. This application requires 1) a smartphone, 2) relieve internet access, as well as 3) an account/card with a Grupo Aval affiliated bank. As of now, this mobile wallet can only be used in a specific set of business in five of the largest cities in Colombia (e.g. Bogota, Medellin, Cali, Barranquilla and Bucaramanga). This application is not yet in available in the rural towns that would benefit most smallholder farmers in Colombia.

Billetera Móvil: After AvalPay, Bancolombia's Billetera Móvil is the second largest mobile wallet platform in Colombia. To gain access, users must have 1) a smartphone with either an Android (version 5 or later) or an iOS (version 8 or later) operating system, 2) access to a data plan or reliable WIFI connection, 3) download

the “Billetera Móvil” app on their phone. While transactions through this mobile wallet are free of charge, users may not carry out payments of more than COP$300,000 per transaction or COP$3,000,000 per day. In contrast to AvalPay, which on operates in specific businesses in the 5 largest urban centers, “Billetera Móvil” has affiliation with thousands of businesses in 22 of the 31 *Departamentos* of Colombia. However, the great share of the affiliated businesses are located in the more urbanized municipalities of each Department, rather than in rural ones. Among the 22 Departments covered, Antioquia is the only one with several rural municipalities where this mobile wallet platform is current being used.

- **Are the mobile wallet platforms in Colombia interoperable systems – as with Credibanco for credit card processing – or proprietary systems?** Since most mobile wallet platforms in Colombia are tailored to the urban consumer, the capabilities of these systems are not yet relevant (or applicable) to most smallholder farmers. However, in the case of AvalPay and Billetera Móvil, both platforms operate under a “interoperability scheme” which allows consumers and business affiliated with Grupo Aval or Bancolombia to gain access to this mobile payment systems.

- **Are the interfaces similar (between the different providers) for farmers and transporters that might use them -- whether or not they use them for avocados?** The question of user interface is not applicable since the clear majority of smallholder farmers do use mobile payments/wallets, let allow have access to a smartphone and/or reliable internet signal. In the case of the two largest mobile wallet platforms, both AvalPay and Billetera Móvil have a single interface for all consumers. Based on their websites, it is not too clear how a business can enroll/become affiliated with one of these mobile wallet systems or how the different the interface for these prospective businesses ultimately is.

- **What kind of cell phones are used by the different players in the supply chain? How many of the producers, transporters or intermediaries in our target areas have smartphones on a proportional basis (e.g. one in 3, one in 15)?** The majority (around 7 out of 10) of small producers have access to a conventional phone. It is very rare for them to have formal phone plan; most have prepaid phones which they pay as they go. Since they have to visit the nearest town to buy phone credits, it is not unusual for them to go days (sometimes weeks without being able to use their phones. A small share of small holder producers (around 3 in 10) has access to smartphone. We estimate the rate of smartphone usage among intermediaries and transporters to be slightly higher than that of smallholder producer; they depend on its messaging apps (e.g. Whatsapp) to communicate with potential sellers (e.g. producers) and buyers (e.g. large intermediaries, large producers, exporters). Here are some of examples of the types of smartphones that are used by small holder producers in the avocado value chain:

Hyundai Doveo

General | Fotografías (3) | Características — Opinar

Pantalla normal 240 x 320 Pixels
Música Reproductor y Radio FM
Cámara Trasera 0.3 MP
Memoria 32 Mb y 32 Mb de RAM
Internet Sin conexión a Internet
Batería 900 Amperios hora

Más imágenes (3) — Comparar Hyundai Doveo

¿Te gusta? Vota por él!	Dimensiones y peso	Detalle de la pantalla
Nota: 5,3	104 — 82.21 Gr — 44.1 18.6	Tamaño **2.4 Pulgadas** Resolución **240 x 320 Px.**

G+ Like 0

Haweel H1

General | Fotografías (4) | Características — Opinar

Pantalla grande 540 x 960 Pixels
Android Android OS, v6.0 (Marshmallow)
Cámara Trasera 5 MP y frontal 2 MP
Memoria 8 Gb y 1 Gb de RAM
Internet 3G y WiFi
Batería 2300 Amperios hora

Más imágenes (4) — Comparar Haweel H1

¿Te gusta? Vota por él!	Dimensiones y peso	Detalle de la pantalla
Nota: 6,2	147 — 176 Gr — 73 11	Tamaño **5.0 Pulgadas** Resolución **540 x 960 Px.** Tipo de pantalla **IPS**

G+ Like 0

BenQ B505

General | Fotografías (6) | Características — Opinar

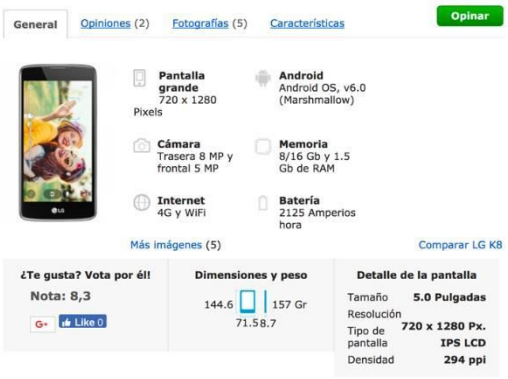
Pantalla grande 480 x 854 Pixels
Android Android v5.0.2 (Lollipop)
Cámara Trasera 5 MP y frontal 1.9 MP
Memoria 8 Gb y 1 Gb de RAM
Internet 3G y WiFi
Batería 2100 Amperios hora

Más imágenes (6) — Comparar BenQ B505

¿Te gusta? Vota por él!	Dimensiones y peso	Detalle de la pantalla
Nota: 6,9	142.8 — 155 Gr — 73.9 9.5	Tamaño **5.0 Pulgadas** Resolución **480 x 854 Px.** Tipo de pantalla **IPS** Densidad **196 ppi**

G+ Like 0

LG K8



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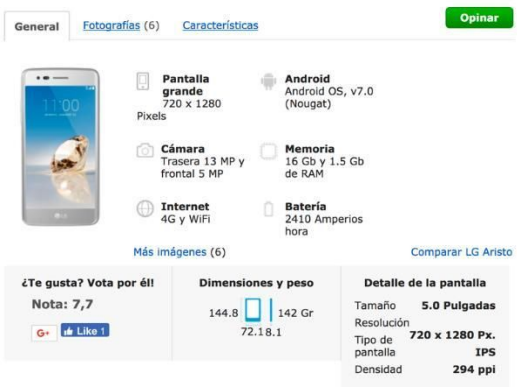
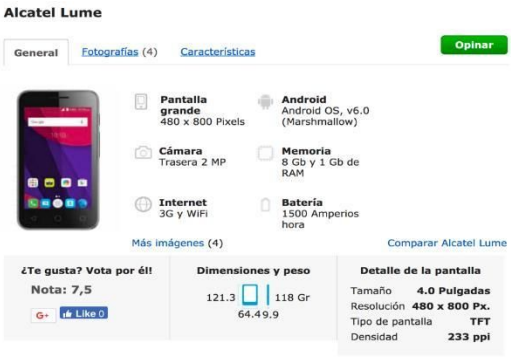
LG Aristo





・**How well do the services work? Are there connectivity/quality issues with these services?** The lack of 3G/4G network coverage is one of the main barriers for smallholder producers to adapt/use smartphone technologies. While the associated costs (e.g. data plan) are relevant, even if smallholder farmers can afford to buy them, the poor network connectivity will often render these devices useless. Even among the four MNOs (e.g. Claro, Movistar, Tigo y Avantel) with the greatest rates of rural coverage, the quality of the internet signal that rural segments may receive can be poor to very poor.

Rural Micro-Insurance

Agricultural Insurance Ecosystem

In Colombia, agricultural insurance plans for smallholder farmers—including avocado producers— are managed by the Fon Agropecuario (FINAGRO). As a public-

private enterprise linked to the Ministry of Agriculture and Rural Development (MARD), FINAGRO acts as a second-tier enti institutions, so that they, in turn, grant credits for productive projects. One of the key institutional mandates of FINAGRO is

medium and large producers. The entity achieves this through the Incentivo al Seguro Agropecuario (ISA). ISA was designed safeguard food production, 2) improves rural incomes, 3) protect agricultural investments financed with credit resources fr FINAGRO) or with the producer's own resources.

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Insurance Policy Coverage & Compensation

As of now, ISA only protects producers from the damages caused by natural risks of climatic, geological and biological origin, such as: heavy rains, floods, droughts, frost, hail, landslides, avalanches, as well as plagues and diseases. FINAGRO's *seguro agropecuario* policy coverage only protects producers during the production stage, it does not cover factors associated with transport and/or post-harvest loss. If a natural/geological/biological event affects the insured area, the agricultural producer is entitled to compensation over the insured value. The volume of the compensation will depend on the conditions established in the insurance policy for each producer. As established in the National Decree 1071 of 2015, all agricultural crops, pastures, forest plantations, livestock (including silvo-pastoral systems), fisheries and aquaculture can be assured by FINAGROs *seguro agropecuario*. For agricultural activities and forest plantations, the incentive benefit will be granted on the value of the premium that corresponds to the insured values within the following limits.

Maximum Value Insured per Hectare and Production Type

Product Type	Maximum value insured by He
Short-cycle vegetative crops	COP$ 20.000.000
Medium and late yield crops(e.g. avocados)	COP$ 25.500.000
Forest plantations and silvopastoral systems	COP$ 8.500.000
Crop in Controlled Environments	COP$ 156.500.000

Insurance Providers

For a producer to determine the exact insurance premium to be paid, he or she must get in contact with the agricultural insurance division at one of the main insurance providers. As of 2017, there are only five (5) private insurers that offer FINAGRO's *seguro agropecuario*, this includes: Mapfre, Sura, La Previsora,

Seguros Bolívar y Allianz. Based on numerous variables, the agricultural insurance specialists at this companies will formulate the premium of each individual insurance policy. Below is a list of contacts for each of the agricultural insurance providers in Colombia:

PROVIDER

Sura

NATIONAL HOTLINE

018000519991
018000518888
AGRICULTURAL INSURANCE SPECIALIST

leoleon@mapfre.com.co, camarti@mapfre.com.co, nmcasti@mapfre.com.co

PHONE

Mapfre

➢ (+57) (1) 6503300 Ext.1315,1316,1364

➢ (+57)(4)4378888, Opciones 1-2 ➢ (+57)(4) 2602100 Ext. 45831

suscrip.agro@suramericana.com.co, mquirozq@sura.com.co, cramirezv@sura.com.co

La Previsora

018000910554
carlos.gonzalez@previsora.gov.co, felipe.vinez@previsora.gov.co, juan.gomez@previsora.gov.co

➢ (+57)(1)3487555 Ext.5280,5283,5431

Seguros Bolívar

N/A

oscar.pinto@segurosbolivar.com, deidy.rodriguez@segurosbolivar.com

➢ (+57) (1) 3410077 Ext 98748

Allianz

N/A

jeisson.donoso@allianz.co, diego.forero@allianz.co

➢ (+57) (1) 5600600 - 5600601, Ext. 1378, 1421, 1412, 1610

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Insurance Incentives

To increase access to the *seguro agropecuario*, the national government of Colombian—through FINAGRO—provides producers with subsidies on agricultural insurance premiums For producers who purchase the insurance, the government covers upward of 80 percent of the insurance premium. In other words, if the insurance premium is COP$100,000, the government would be able to pay up to COP$80,000. The farmer would pay the remaining COP20,000 as well as a 19 percent IVA tax. While the basic insurance subsidy covers 60 percent of the premium, it can reach 80 if the producer has an existing credit with FINAGRO and if is duly registered with FINAGRO to finance the insured activity. Moreover, the subsidy can also reach 80 percent of the value of the premium if one of the following circumstances are met:

1. The crop is a product prioritized under the Program Colombia Siembra**:** Avocado**,** maize,

soya, commercial forest plantations, rubber, silvopastoral systems, rice, barley, oil palm, cocoa, avocado, mango, pineapple, passion fruit, gulupa and granadilla.

2. The assured agricultural activity is part of the list of export contingent products. Avocado, banana, coffee, sugar cane, palm oil, banana, uchuva, bananito, cocoa, flowers, granadilla, lime tahiti, mango, pineapple, pitahaya, gulupa, orange, mandarin, lemon, passion fruit, lettuce, papaya, tobacco leafs, tomato of tree, cane panelera and strawberries.

Since the subsidies have a progressive structure, it is more likely for smallholders producers (vs. medium and large ones) to receive a more substantial agricultural subsidy. In this sense, while the subsidy for

medium and large producer is capped at 70 percent, the cap for small producers is upwards of 80 percent of the premium.

Effect of Agricultural Insurance on Crop Prices

On most cases, producers do not determine the prices for their crops based on the cost of their agricultural insurance premiums. Most small avocado producers are price takers, meaning that they will take whatever the market price is for the particular crop or, if in need to buy, whatever the buyer is able to offer them.

Strategic Players in Colombia's Agricultural Insurance Market

Without question, the five agricultural insurance providers are the most strategic players that the Agromovil team should be speaking with. Not only are they very large and profitable enterprises, they also have experience formulating competitive rates for agricultural insurance. In addition to these private players, it might also be worthwhile for the team to speak and meet with representatives from FINAGRO in Bogota. After all, FINAGRO is the entity that oversees the agricultural insurance program as well as the related subsidies on insurance premiums. They might have an innate interest to extend these insurance policies to other aspects of agricultural production such as transport. Here is the contact information for the agricultural insurance division at FINAGRO:

Productos y Servicios - Seguro Agropecuario FINAGRO	01 800 09 12219	seguroagro@finagro.com.co

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・Are there key players that want to expand the rural microinsurance market? Is Bancamia one of them?In Colombia, all banks (i.e. not just Bancamia) are required by law to channel FINAGRO financing for agricultural producers. However, this is in the form of credit (e.g. for inputs) and not necessarily for insurance. The only entities that can provide the government-backed agricultural insurance are the five insurance companies accredited by FINAGRO:

Transport

・How do avocados get to market currently – step by step?

Mapfre, Sura, La Previsora,

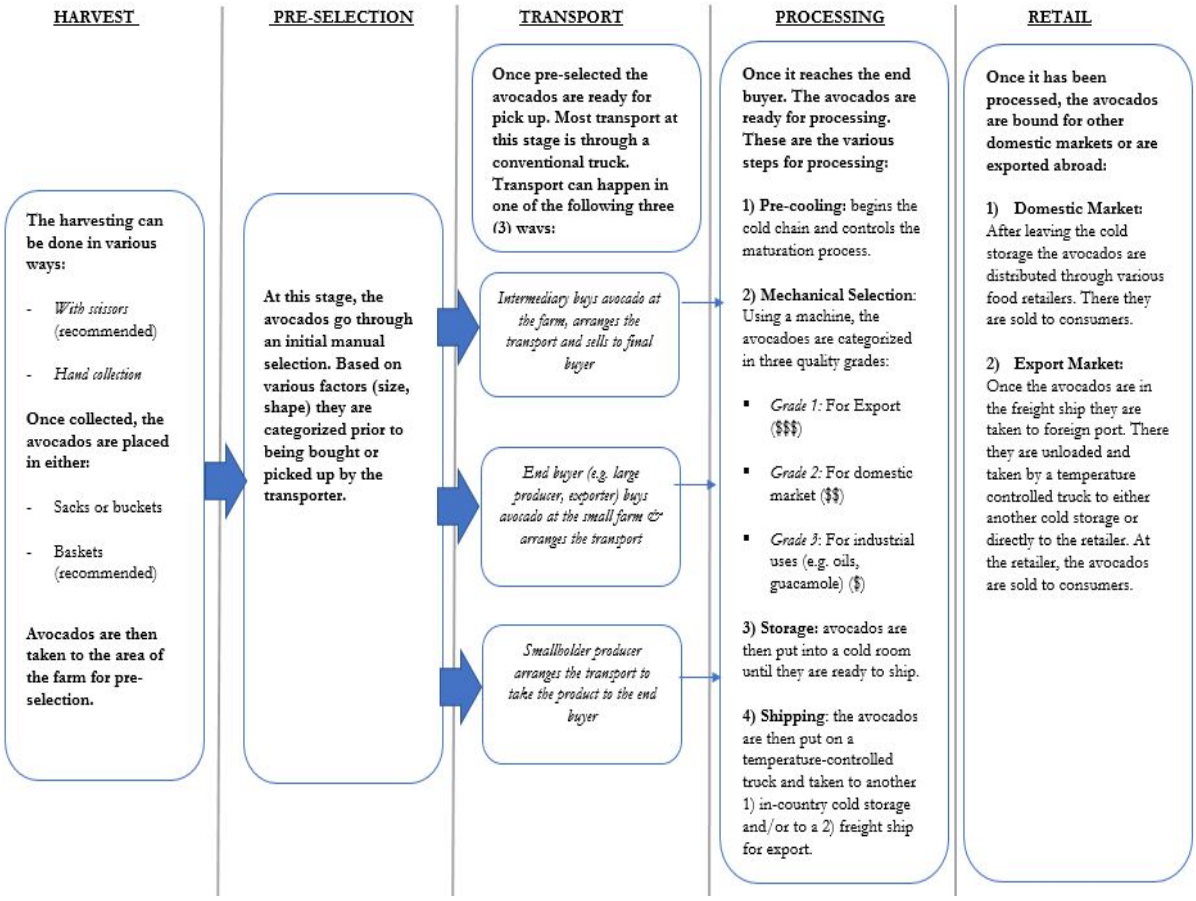
Seguros Bolívar y Allianz. In late 2015, there was talks that Bancamia would roll out a rural

producer insurance in 2016. As part of these efforts, Bancamia organized some workshops around

this topic, but from what we tracked there has not been any activity in this space since. However,

Bancamia does offer some types insurance plan attached to their lines of credit (not just for rural

producers). That said, it is not too clear whether it's worthwhile reaching out to them about this venture.



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agromovil

- **What is typical volume? How many pickups do typical transporters make on each trip?** This very relative since the volume is directly related to the location and the harvest capacity in each farm. Oftentimes, the transporter will call numerous producers ahead to ask them the volume that they have currently available to sell. Depending on this volume as well as the proximity between one producer and the next, the transporter will be able to choose the most appropriate type of truck (e.g. typically with a payload of less than 5 tons) to dispatch as well as the most efficient route to take for a pick-up circuit. It is worth noting that while in some circuits a transporter may just pick a single crop (e.g. avocados), it is not unusual for them to pick-up several crops/products (e.g. tomatoes, coffee, bell peppers, plantains) at each avocado producing farm.

- **Who provides transport?**The provision of transport services depends on where the purchase of the avocados is made. For instance, if the buyer (e.g. "*comercializador*") purchases

the avocados directly from the producers' farm, then the transport is arranged by the purchaser. Meanwhile, if the purchase is made at the sorting plant then the transport is arranged by the producer. Since most producers do not own the types of vehicles (e.g. trucks) necessary to transport large volume of avocados, they must contract these services from a transport company or, in most cases, an independent transporter.

- **What kind of trucks or equipment do they use to transport? (large vs. small, other info)** This depends on the volume to be transported as well as the location/topography areas where the avocados are produced. Given the poor quality of rural roads (e.g. *vías terciarias*) in Colombia, most transporters opt for using trucks with a payload capacity of less than five tons (e.g. Chevrolet NPR series, HINO 500) when traveling to smallholder avocado farms. Depending on road conditions (e.g. heavy rains in dirt roads), however, these trucks might have to transport less weight than their actual capacity allows them.

- **How is pickup arranged – and who does the arranging?**The pickup is either arranged by the producer or the buyer, depending where the purchase of the avocados is made. if the buyer (e.g. "*comercializador*") purchases the avocados directly from the producers' farm, then the transport is arranged by the purchaser. Meanwhile, if the purchase is made at the processing plant then the transport is arranged by the by the producer.

- **What if any technology do they now use now – cellphones, websites, other?**Most pickups are arranged using conventional cell phones. While SMS is used, most transport arrangements are made through calls. Increasingly, among the small share of producers/transporters with smartphones, mobile applications (e.g. mainly Whatsapp) are also being utilized.

- **Who pays for transport? When? How?**The payment of transport services depends on where the purchase of the avocados is made. For instance, if the buyer (e.g. "*comercializador*") purchases the avocados directly from the producers' farm, then the transport costs are paid by the purchaser. If the purchase is made at the processing plant then the transport cost is paid by the producer. Since most producers do not own the types of vehicles (e.g. trucks) necessary to transport large volume of avocados, they must contract these services from a transport company or, in most cases, an independent transporter. Typically, after the transporters load the product into the truck, the producer will get on the truck with the

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transporter and accompany him to make the drop off in the processing plant. When they reach the processing plant the producer will pay the transporter in cash for the agreed amount. If the producer has a trusted transporter, he will simply pay them for the transporting services and allow them to take their product to the processing plant.

- **Are transport assets being underutilized (e.g. trucks that come back half empty)?**In Colombia, it is very common for the trucks traveling to the rural areas to pick up

agricultural products (not just avocados) to be empty when the reach producers. In this way, the capacity of these vehicles is being underutilized.

- **When trucks bringing avocados to processors go out to production areas to pick up the avocados, do they go out full? If so, what are they bringing and to whom?**They usually arrive at the farm empty. However, that does not mean they went empty during the entire trip. It is not unusual for transporters traveling to pick up agricultural crops to often haul supplies (e.g. food, medicine) to the nearby towns (read: economies of scale). At the towns, they sell or drop off most of the goods they bought, so when they arrive at the individual farms their truck bed is empty.

- **What share of smallholder farmers have to transport their produce to a central pick-up place vs having it picked up close to/on their farms?**Based on previous characterization of avocado producers, we estimate that upwards of 90 percent of producers sells their product at their respective farm. As such, only around 10 percent of them sell their product at a processing plant.

- **If they need to transport their harvested crops, how do they do this transporting? Own trucks? By animal or bicycle? Other methods?**Based on previous characterization of avocado producers, we estimate that around 10 percent of them sell their product at a processing plant. For this small share of producers, the majority contract the services from a transport company or, in most cases, an independent transporter. In the case of avocados, it is very rare for producers to transport them through other modes such as animals (e.g. mules) or bicycles.

- **How far do they need to transport goods before they're picked up? How long does this transport to an aggregator or buyer take them?**The route is relative since the distance between farms can vary greatly. On average, these farms would be located within a driving distance of 20-50km from the nearest town and around 150 - 250Km (155.3 miles) from a processing plant. Depending on road and weather conditions, the drive to the processing plant can take between 3 to 6 hours.

Intermediaries/Supply Chain

- **Where exactly in the supply chain is the post-harvest loss (PHL) happening?** For the avocado supply chain, most of the PHL occurs during the post-harvest handling and shipping stages. After harvesting and collecting the avocadoes, many smallholder producers will throw the fruit in sacks (e.g. *costales*) with little to no attention to the impact that these poor handling practices can have on the quality of the product. Then, when the product is passed on to the transporter—whether contracted by the producer or the buyer—the quality of the avocado can be degraded even further. When the transporter vehicles traverse through poor quality roads (e.g. holes, uneven surfaces), the vehicles tend to make sudden and sharp movements which can damage the fruit.

- **How do the middle men operate in the avocado sector?** Middle men in the avocado sector operate as follows: The producer calls the buyer, in this case the intermediary. The middleman tells Producer A that since he already has sufficient avocados in stock the only way he can buy more would be with a price lower than that set by the market. When Producer A sells his avocados less than the market price, the intermediary goes to Producer B and tells her that she is selling her avocado too expensive and that she should decreases the price to the level of Producer A. In this regard, these intermediaries take advantage of small producers and play them of against one another so they can get a higher profit margin with little effort.

- **How much of a typical cut do they take?** This varies greatly. The cut of the intermediary can depend on global/local demand & supply, current market prices, seasonal fluctuation, among other actors. However, it is not rare for the intermediary to get 2 pesos for each 1 peso paid to smallholder producers.

- **How do they find their clients/How do clients find them?** In Colombia's avocado sector, producer and buyers (including intermediaries and direct buyers) find each other through the word of mouth and/or personal references. For example, it is not rare for Producer A to tell Producer B that he has a buyer interested in purchasing more avocados.

- **Do they provide any value outside of arranging the transaction, for example assuring quality control for processors?** None. The main objective of the intermediary is to make as high profit margin as possible without the need of doing quality control for the end buyers.

- **What are the major transport/logistical bottlenecks in the supply chain? How is it working now?** The most significant bottleneck in the avocado supply chain is the poor quality rural roads. This is particularly apparent in the hillside and more remote avocado-producing localities. In these communities' landslides are prevalent. When landslide occurs—and there is no alternative road— whomever is transporting the crop must 1) stop Truck A at one end of the landslide, 2) unload the various boxes of avocadoes, 3) carry each box through the landslide-covered segment of the road (read: very dangerous), 4) load the boxes into Truck B so that they can be transported to the processing plant before the rot. This process can take several hours to sometimes days, depending a gravity of the landslide.

12]