



Agritask 

**THE AGRICULTURAL
INSURANCE CONUNDRUM
NEW CHALLENGES & OPPORTUNITIES**

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In traditional property and casualty lines of insurance, insurers and the insured generally have the same goal – to never need to file an insurance claim. In an ideal world, insurers get to keep the premiums and interest, and the insured have an accident-free life with peace of mind from their coverage.

Agricultural insurance doesn't fall into that nice little box, especially during these times of climate change. Even more critically, agricultural insurance is not generally available to the people who need it the most, the ones most affected by climate risk – smallholder farmers, 500 million strong, with 3 billion family members, workers, and other professionals whose livelihoods depend on them.

“Globally, less than 20 per cent of smallholder farmers have insurance. Low awareness of insurance, the high cost of premiums and long claim settlement processes have restricted farmers’ use of indemnity-based insurance services.”

GSMA Mobile for Development Report, Agricultural insurance for smallholder farmers: Digital innovations for scale

THE AGRICULTURAL INSURANCE OVERVIEW

Generally, crop insurance penetration is low around the globe.



Most smallholder farmers in places such as Africa and elsewhere don't have access to crop insurance at all. Government subsidy programs for smallholder farmers exist only in a handful of countries; when they do exist, the population reach and risk coverage tend to be extremely limited. The products tend to be parametric - with payout based on observable external parameters, such as the level of rainfall in the region. Thus, they are far from matching the conditions in the fields. Most farmers can't afford the insurance, so there is little incentive or investment from the private insurance sector to build up the required distribution infrastructure and gather necessary knowledge to design appropriate products, such as paying for initial field data collection. As a result, only 3 percent of smallholder farmers in Sub-Saharan Africa have agricultural insurance, for example.



In some parts of the world, such as Latin America, which has a substantial number of commercial farms, private insurance products exist even without government subsidies. However, these markets still use traditional agricultural insurance solutions. When notified of a claim, insurers send field inspectors to physically check damages, resulting in a significant administration and operation expenses. This leads to relatively high premiums, which precludes the majority of farmers from buying crop insurance.





A handful of countries do have high crop insurance penetration. These are mostly OECD countries with substantial and long-standing government subsidy programs, with insurance product distribution infrastructure in place. Farmers in these areas tend to be more educated about risk protection and understand the value of insurance. However, the insurance products tend to be highly regulated and have limited flexibility in terms of product design or pricing.

Even within the existing crop insurance environment, the market is significantly underperforming its potential. Today, crop insurance premiums total about \$35 billion, translating into is only 1-1.5 percent of non-life premiums. However, the significant need means that it could grow significantly, with an estimate of 6.5 percent per annum to reach \$53 billion by 2027. The potential is significantly more with greater innovation.

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BENEFITS OF CROP INSURANCE

Without crop insurance, governments are occasionally blindsided by climate and weather events every few years. It's difficult to budget "adversity" - and easier to budget insurance premiums.

The most critical benefit of crop insurance is similar to that of other insurance sectors: risk transfer from those less able to absorb it to those who better resourced to do so. Without crop insurance, individual farmers need to bear the impact of climate volatility, with significant effects on smallholder farmers already living on the edge. With crop insurance, risk can be transferred to insurance companies, reinsurers, and the investment community who have capabilities to manage and diversify the risks

through financial market mechanisms. For example, global (re)insurers absorb losses from a drought in Kenya but offset them with profit from good, stable harvest in Colombia. Their other business lines further spread out the risk - auto and life insurance are uncorrelated to weather. They also have financial instruments to trade that allow them to further hedge risks. In contrast, individual farmers have no way to absorb any risks.

With growing pressure to produce more food on the same amount of land, stable income is key to incentivize farmers to invest in order to improve productivity. Crop insurance helps stabilize farmers' income over time. In good years, they profit from the sales of their crops. With crop insurance, they maintain some level of income in years of drought or other weather challenges, which is expected to become more frequent because of climate change.

This allows them to purchase high-quality seeds, equipment, and other inputs toward the next growing season. Furthermore, stable income for farmers has a stabilizing effect on their wider community, as the local suppliers' incomes remain consistent as well. Positive effects reverberate even broader, as it becomes much easier to get credit to upgrade farming practices because the steady incomes mean that financial institutions have reduced the risks within their lending portfolios.

On a macro level, with agricultural risks transferred to the private insurance sector, governments no longer have to suffer from budget unpredictability, needing to bail out their agricultural sector every time a negative event occurs that affects crop yields. Without crop insurance, governments have "surprises" every few years – or every year, based on the climate events; it's difficult to budget "adversity." This is precisely why some governments, like the United States, have implemented subsidized insurance programs.

With climate change as a global issue, the need for crop insurance is growing exponentially; risks must be transferred away from those most in need.





INSURERS – THE CHALLENGE

Insurance penetration in the agricultural sector is very low as compared to other sectors for a variety of factors.

First and foremost, agricultural risks are extremely complex and unlike any other risks in other insurance sectors. Crops, the insured assets, constantly evolve throughout the growing seasons, with no fixed value as in the standard case of property or auto insurance. For example, a damage-causing event occurring a week after sowing of the seeds has significantly lower losses than a fire the week before harvest. On a more granular level, each crop has its sensitive periods whereby certain weather events, such as lack of rainfall, can have more impact than others. The magnitude of events, such as specific levels of rainfall or

temperature, also have a varying level of damage depending on timing in the season.

In technological terms, agricultural risks are considered temporo-spatial – shifting through time and space. Creating, pricing, and managing crop insurance require specific understanding and knowledge that is generally not available in the mainstream, which means limited personnel capacity exists to support agricultural insurance in general. While insurance, reinsurance companies, and investors already have well-established relationships and practices with regard to other lines of insurance, they have a more limited infrastructure when it comes to agricultural insurance.



Such complexity in crop insurance creates challenges from product design and distribution to monitoring and claims management. To be effective, agricultural insurance products cannot be “one size fits all” and need to be tailored per crop and geography. In addition, most of today’s crop insurance products are traditional, meaning field inspections are required for both initial policy assessment and loss assessment. Even the distribution and sale of insurance products require physical visits to the fields. However, as most farms are in remote locations with limited infrastructure, operational costs are exceptionally high when compared to other insurance sectors. Fraud is also commonplace as few monitoring mechanisms exist in claims management, as in practice many field inspectors are rarely accountable to the insurers.

As an alternative to traditional insurance products, industry practitioners have developed parametric products; these insure policy holders by paying a set amount based on the magnitude of the external, observable proxy – such as level of rainfall from satellite - versus the actual magnitude of losses per plot. While this lowers operational costs, most

parametric products have a significantly high basis risk. This means the payout from the prescribed calculation does not match the conditions in the fields. As a result, parametric products remain a small part of the global agricultural insurance portfolio despite the fact that they began in the 1990s.

The lack of agricultural data is a major issue stifling innovation. Creating suitable products, underwriting methodology, risk analysis, and claims management depend on data most insurers and stakeholders don’t have access to, and there is little appetite to invest in the critical, but very expensive research for capacity building.

On top of this, while the motivation may exist, commercialization possibilities may not be obvious. Some insurance products in emerging markets are offered and supported by donor organizations. Despite the goodwill, they often lack a path to long-term commercial viability.

All the factors above create a chicken-and-egg problem whereby a small industry reduces the drive for innovation or improving the customer experience, which, in turn, keeps the insurance penetration low.

FARMERS – THE CHALLENGE

From the farmer's perspective, agriculture is a lifestyle as well as a business, so the mindset to insure the farm as a productive property doesn't always take priority.

In particular, smallholder farmers have a much lower level of understanding and trust in insurance products. They may not have been exposed to them and aren't familiar with the fine prints such as deductibles, where they are not compensated for a certain level of first loss or concepts such as parametric insurance, where they are paid by external parameters, not actual damage. Importantly, many just don't have access to the education or resources necessary to purchase the right products at the right time to serve their best interest. Worse yet, when they do not get paid when they suffer damages, because of imperfect nature of the insurance products, they lose faith in crop insurance. As a result, many of them simply don't buy insurance and may erroneously think a big payday from the government or an NGO awaits after a disaster strikes.

No matter what part of the world in which they operate, farming is expensive, and farmers have to invest upfront, before the season begins. While some smallholder farming communities have funded collectives to provide loans, some borrow from the black market, putting both their farms and lives at risk.





Financial institutions themselves find it difficult to lend to smallholder farmers – they generally don't have a lot of collateral beyond their land, which may be leased or cost the bank more to take it over than the loan was worth. Generally, financial institutions are less likely to make major loans if the farmers are not insured – farmers certainly can't pay off their loans if the crops are destroyed before harvest. Sometimes this creates a Catch 22 from which they cannot

escape – the farmers can't invest in better equipment unless they have farm insurance, but the insurance companies don't have an appropriate policy they can buy.

These issues apply less to commercial farmers, who are more business-oriented and often have better resources and sophistication. However, they still suffer similar problems to a certain degree.

CLIMATE CHANGE AND OTHER CHALLENGES

Climate change makes it harder for smallholder farmers to operate. They are more dependent on natural resources and have a harder time mitigating the impact from climate change. For many farmers in emerging markets, the impact can be a matter of life and death, impacting food security, health and wellbeing.. That's why agricultural insurance is so critical.

For insurers, climate change also makes it more complex to develop suitable insurance products, even though farmers need protection against climate volatility now more than ever. As the weather becomes ever more erratic, historical weather patterns often used to

design products become less relevant, and the potential losses can be enormous. Furthermore, the level of potential losses won't be adequately covered by the level of premiums they'll be collecting given the farmers' low willingness to pay.

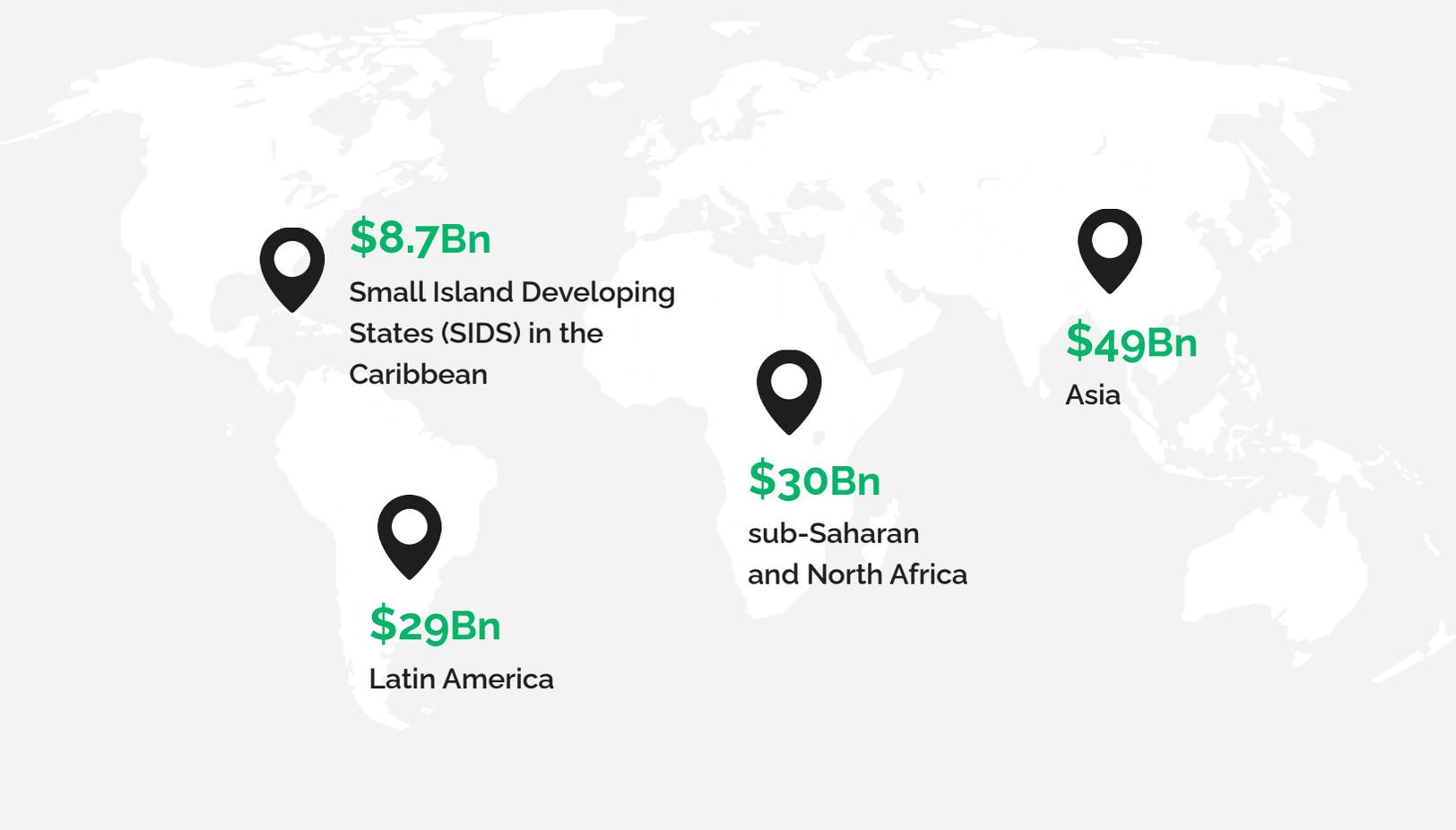
As a result, it is less desirable for insurers to expand the agricultural insurance line, and premiums remain high. In turn this makes it difficult for individual smallholder farmers to purchase insurance in the first place – which leaves fewer resources for the insurance companies to innovate, creating a vicious cycle of inaction.

According to the Food & Agriculture Organization (the FAO), between 2008-2018, more than \$100 billion in crop and livestock production was lost globally due to natural disasters.



CLIMATE CHANGE DRIVING FINANCIAL LOSSES

From 2008–2018, billions of dollars were lost as a result of declines in crop and livestock production in the aftermath of disasters.



A study by Stanford University climate scientists found that in the United States alone, Climate-fueled temperature increases generated an estimated **\$27 billion in insurance payments to farmers between 1991 and 2017**. Those losses accounted for nearly **20% of the program's total payouts** over that period.



INNOVATIONS IN AG-INSURANCE



Digitization



Sales &
Quotations



Underwriting



Claims
Management



Farmer
Education

Although highly traditional, the agricultural industry as a whole is starting to understand the need to adopt a full range of technologies and practices, from IoT and sensors to agricultural intelligence and sustainable and regenerative agriculture to gain insights into improving farming methods and sharing best

practices. Insurance companies can leverage this spread of technology and knowledge to reduce their administrative and operational costs, improve underwriting, deliver more accurate quotations, and better monitor the “facts on the ground.”



DIGITIZATION

Digitization is the first step to provide insights that were previously impossible to achieve, creating structured temporo-spatial data. For example, weekly descriptions and photos of crop development, sensors recording soil moisture and nutrients, etc., can provide a range of insights for underwriting, claims management, and monitoring.

On the basic level, digitization makes the field work more accountable and efficient. As all data points have time, location, and user stamps, distant stakeholders can have comfort that the field inspections occur as they should, as the exact time and place where they take place is clearer. Furthermore, complex calculations based on yield samplings or damage calculations can be automated based on embedded models with regard to final projected harvests versus the stage at which an issue occurred, minimizing human errors. The output can flow from the fields in real time to the desk of the decision makers in an organized, user-friendly manner.

In addition to immediate decisions, over time these structured databases enable the identification of patterns and irregularities that can be used to optimize field inspections. For example, the focus can be only on the plots in which reported conditions in the fields are vastly different from neighboring areas or weather patterns.

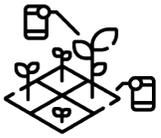
To be sure, ongoing local field inspections are still relevant to build and maintain the trust and relationships between farmers and insurers and to gain a complete picture of what is actually happening on the farm. With improved data, though, they can be done much more efficiently and quickly.





SALES AND QUOTATIONS

Digitization at the point of sale can be used to streamline the quotation and application process and improve the user experience. Instead of form upon form and lengthy waiting processes, digitization can capture agronomic data sets, which insurance companies can apply within their risk models, providing both underwriting insights and more accurate quotations on the spot. As automation reduces administrative time and costs, it leads to lower premium costs, as well.



UNDERWRITING

Digitized field data can be easily crossed with other external data sources, such as climate history, altitude, soil type, claims history, etc., to map patterns of risk. This facilitates the learning curve in the underwriting and monitoring process. Insurers will be in a position to know more with fewer field visits.

Furthermore, these data sets can be used to analyze specific farms versus their peers growing the same crops in the same region to determine individual risk – one farm may be using different methods that lead to better results. These might eventually lead to new types of products.





MONITORING AND CLAIMS MANAGEMENT

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FARMER EDUCATION

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CREATING A SUCCESSFUL CROP INSURANCE PROGRAM

Governments can consider offering subsidies or low-interest loans in cases where the private insurance sector has not yet emerged or for the farmers who cannot yet afford insurance premiums.

Full global creation, adoption, and implementation of agricultural insurance programs aren't going to occur overnight. They depend on a significant range of factors even beyond the insurance ecosystem.



Transformation of smallholder farming from subsistence to business. While seemingly an overwhelming task, a lot of the food and beverage companies who depend on their crops for a more stable supply chain are taking the lead.



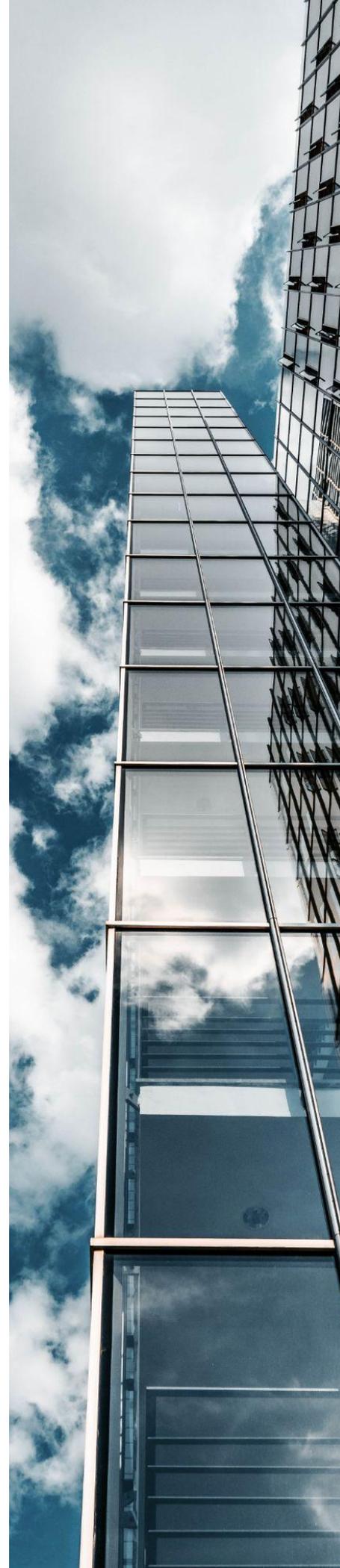
Capacity building is critical, both on the industry as a whole and individual insurance companies. The existing financial infrastructure of the industry must embrace agricultural insurance – e.g., insurers, reinsurers, the financial system, etc. The insurers themselves must find the resources internally to develop the products, build the digital infrastructure, assign the underwriters and so on.





While the degree of government intervention is always debatable, it is acknowledged in many circles that scale matters when it comes to risk diversification and protection. In many places around the world, agriculture is an existential sector, affecting livelihoods in a way similar to healthcare or housing. Likewise, in those sectors, the governments can consider offering subsidies or low-interest loans in cases where the private insurance sector has not yet emerged or for the farmers who cannot yet afford insurance premiums.

Government intervention may also be necessary with regard to working with farmers to implement risk-abating practices, such as drip irrigation in areas where rainfall has lessened over the years or increasing the use of regenerative agricultural practices.





LEVERAGING AGRONOMIC INTELLIGENCE TO BUILD THE AGRICULTURAL INSURANCE INFRASTRUCTURE

Agronomic intelligence (Agi) is a critical component of any agricultural insurance infrastructure. It allows insurance companies to leverage the data from the field to better quantify risk, determine pricing, create individual policies, monitor field activities,

decide when in-person visits are critical, and plan for challenges before they occur – allowing the insurance company to reduce administrative and operational costs, minimize risk, and provide substantial benefits to farmers – especially in the form of critical data.



AgI simplifies the entire process:



REMOTE MONITORING

Gain visibility into fields through the season.



QUALITY CONTROL

Structure field visits with controlled forms and geotagging.



RISK-BASED UNDERWRITING

Use geospatial risk data.



OPTIMIZE FIELD VISITS

Identify areas of interest from remote sensing and other data.



STRUCTURED DATABASE

Create a geospatial database for better underwriting and product design.



STREAMLINE OPERATIONS

Digitize field protocols and automate processing tasks.

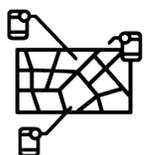
The Agritask open Agronomic Intelligence (Agl) Platform delivers crucial agronomic insights for better decision making across the entire agricultural intelligence operation. The solution speeds creation of AgI-based models for better underwriting, monitoring, and damage assessment by integrating remote sensing data from individual farms, regional data, and geospatial data into a single model to deliver actionable insights.

Agritask delivers immediate value with:



RISK PROFILING

The technology makes it easy for insurance companies to map the farms and associate them with historical weather patterns, soil types, regional yields, etc. Aggregating data into a single source of truth speeds risk analysis and underwriting decision making.



MONITORING AND CLAIMS MANAGEMENT

With continuous data collection and analysis, it's very easy to spot the anomalies. A "normal-behaving" farm for 89 days that suddenly sends data on day 90 showing the results of a catastrophic fire makes it much easier to assess damages remotely.



SMART INSPECTION AND FRAUD REDUCTION

Remote baseline data collection significantly reduces the insurance company's reliance on local assessors who may have a "personal interest" in the farmer getting a larger claim payout than to what he is actually owed. Leveraging continuous AgI uses geolocation combined with individual data to analyze the trends and make it easier to assess actual damages.



THE FUTURE OF AGRICULTURAL INSURANCE

Agricultural insurance has the potential to be one of the fastest growing and largest insurance sectors. It's a necessary global resource that is become more and more critical. As digitization spreads throughout the agricultural value chain, it will become even easier for insurance companies to leverage insights to deliver superior products to farmers who desperately need them.

ABOUT AGRITASK

Agritask is a holistic ag-operations platform designed to enable fact-based decision making for agricultural operations. To fulfill this vision, Agritask integrates a wide-array of agronomic technologies, tools and data sources into one brain that analyzes the data and produces alerts, recommendations, and actionable insights. Data sources vary from sensors and machinery, aerial images, forecast data, and more.

Agritask's platform is extensive and rich in its capabilities, yet built in a modular, flexible way that allows it to grow with customer needs, while facilitating more advanced use of agri-technologies, making them accessible via one single platform.

It is successfully deployed in more than 30 countries, with a broad spectrum of clients ranging from food conglomerates, ag-buyers, multi-farm corporations, large growers, private equity managers, ag-financing, and insurance companies, to governments and NGOs.

Ag-Insurance is evolving -
contact us to learn more



Agritask 

