



Use of Space Technology

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Major production risks

Weather

- Drought, Flood
- Hail, Frost
- Rain

Mortality

- Accident
- Disease
- Epidemics

Market

- Supply/Demand
- Price
- Trade Agreements



Future growth drivers

- The anticipated growth of world population
- Strategic importance to Governments
- Globalisation of markets in combination with improved income in emerging markets
- Sophisticated farm practice

Emerging Risks

- Climate change
 - Desertification / urbanization
 - Volatility / change in local weather patterns
- Political environment / stability
- Availability of fertilizer / Use of pesticides
- Access to clean water
- Cyber Risk

The management of existing and emerging risks requires significant investments into sophisticated farm practice/technology. The key role of the (re)insurance industry is to protect the insureds income or investment to contribute to livelihood and well-being by adequately:

- Defining/assessing the risk
- Bringing data, creating models to price risk
- Designing products and solutions to prevent/mitigate/transfer risk

Agriculture and Food are playing a key role in any sustainable development! Natural resources are limited, and the production industry must develop techniques, that not only meet future food demand but also avoid the same kinds of unintended consequences of the past. The development and implementation of technology that supports the decision process and foster a sustainable production environment will be key. In its latest report, the FAO states “Sustainable food and agriculture have a great potential to revitalize the rural landscape, deliver inclusive growth to countries and drive positive change right across their 2030 targets for sustainable first Green Revolution!” **This target can be achieved if Governments and Privat Industries work hand in hand and a clear alignment of interests can be found.**

Today, Agriculture Re-/Insurance has already a direct impact on Farmers in many markets

- access to productive resources, finance and services, by providing cover against natural perils and stabilize their income
- ability to respond to shocks and therefore enhance resilience

Key role of the insurance industry is to secure and stabilize farmer’s income

Our role is to support the Agriculture industry (incl. Governments) in the development and application of new technology, risk analysis and innovative products that help not only to respond to shocks, but also to

- prevent,
- prepare and
- protect

This requires an understanding of the potential use of new technology, its limitations and the ability to select the most appropriate tools for a specific transaction (i.e., tailor-made solutions).



Key requirements for development of new or enhancement of existing products

To develop Agriculture insurance solutions, we need to be able to underwrite and manage risks in a fast, accurate and cost-efficient way.

Key challenges to develop appropriate solutions are often:

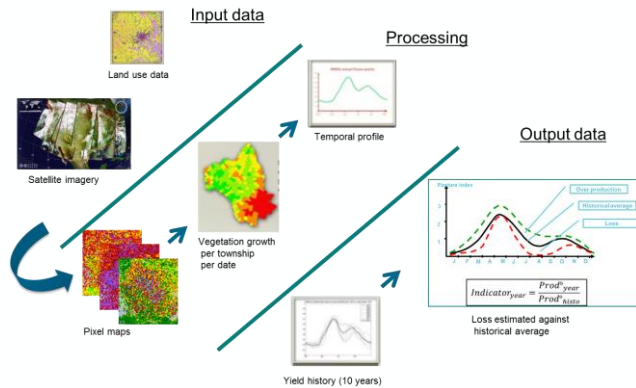
- Lack of access to historical data (not available or reliable / subject to data protection laws / big data volume etc.)
- Costs and time to set up a distribution, underwriting and loss adjustment infrastructure
- Affordability and awareness

How to overcome these challenges? When trying to develop solutions, we have to take a look at the main factors that are driving losses in Agriculture:

- Lack of / excessive rain
- Temperature (heat / freeze)
- Drought
- Livestock: Lack of fodder, adverse weather, disease

By making use of today's available technology (computing power, satellites, crop modelling, fertilizer modelling, weather stations, radar etc.), the industry is in the process of collecting, analyzing and modelling the potential impact of the above factors on a given crop production. The output is used to build a tailor-made index or model for structuring new insurance solutions / products.

Capture the Annual profile of vegetation growth for one grid cell using Biophysical Parameters Technology. Covers all perils during the whole season (developed by AIRBUS).



The final pasture indicator corresponds to the relative value of an annual production compared to the historical production.

In case the yield of the current year is below the trigger a pay-out is made.

The model was developed by Airbus D&S.

Advantages

- Traditional solutions are not suitable for Pasture
- Adaptable to customer needs
- 15 years of historical data
- Multi peril approach
- On time pay-out

Challenges

- Technicality and acceptance

Is Index Insurance the solution?

By making use of the appropriate technology, index insurance can be the solution for a vast number of challenges. However, no solution fits all and the right tools have to be selected, for example:

Small-hold Farmers

Area Yield Index
Rainfall and Temperature Index
Satellite Indices

Large / Farm Enterprises

Area Yield Index
Production Statistic Index
Tailormade products (Weather index combined with crop models and other means of assessment)

Despite the potential for cost-efficient insurance solutions, there are still some factors to be taken into account:

Advantages:

- Cost-efficient technology
- Faster implemented than traditional infrastructure
- Independent source for index (no conflict of interest)

Challenges:

- Basis risk (not suitable for all client segments)
- Acceptance