

# Risky Business:

## Agricultural Insurance in the Face of Climate Change

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### 1. Introduction

One of the key reasons for the struggle of South Africa's smallholder farmers is the inability to effectively insure themselves against extreme weather events that threaten agricultural production. This has become increasingly relevant as climate change has led to the increased frequency and severity of extreme weather conditions (Smart Agri Project Consortium, 2015). Agricultural insurance in South Africa is currently not tailored to the needs of smallholder farmers (FinMark Trust, 2013). An effective insurance option for smallholder farmers would help to make agriculture an attractive option and assist in promoting Agrarian reform in rural areas.

This paper aims to highlight the need for appropriate agricultural insurance schemes and identify the lack of such schemes in South Africa, especially for smallholder farmers. The hope is then that this will be taken further by researchers and other stakeholders to come up with specific solutions and insurance designs that address the issues specific to smallholders and the environmental and economic factors they face.

### 2. Climate change and extreme weather conditions

There is widespread consensus on both the fact that global warming is happening and also that this is causing extreme weather events to become more frequent and more severe (Smart Agri Project Consortium, 2015). Agriculture is particularly sensitive to climate change due to the

reliance on climatic variables such as temperature and rainfall. Crops (extending to cultivar choices and cropping calendars) and selection of livestock are influenced by these variables in different geographic areas.

According to South Africa's Disaster Management Act 57 of 2002, a "disaster" is defined as "a progressive or sudden, widespread or localised, natural or human-caused occurrence which (a) Causes or threatens to cause (i) death, injury or disease; (ii) damage to property, infrastructure or the environment; or (iii) disruption of the life of a community; and (b) Is of a magnitude that exceeds the ability of those affected by the disaster to cope with its effects using only their own resources" (Government Gazette, 2003. p.6)

The Centre for Research on Epidemiology of Disasters (CRED), based in Belgium, keeps a database of all global natural disaster occurrences. For an event to be classified as a disaster requires at least one of the following to be true:

- The reporting of at least 10 people killed
- At least 100 people affected
- A state of emergency declared
- International assistance called (CRED, 2015)

Figure 1 (next page) shows the number of occurrences of storms, floods, droughts, wildfire and earthquakes that were classified as disasters in the CRED disaster database for each decade from 1960 to 2010. There is a clear rise in the frequency of these natural disasters. Up until the end of the twentieth century storms were the most common

natural disaster, but they were overtaken by floods for the most recent decade where there were approximately 63% more floods than storms classified as disasters.

Natural disasters have recently become a particularly relevant reality in South Africa as a severe drought has resulted in 2015 representing the lowest annual rainfall in the country since 1904. Projections done by the Bureau for Food and Agricultural Policy (BFAP) show that the drought will put serious strain on the country's agricultural sector. Production levels are expected to decline significantly and whilst rising food prices will offset some of the negative impact on farmers, it will not be enough to prevent Net Farm Income falling, plummeting to negative values in some areas (BFAP, 2016).

### 3. Agricultural insurance

Agricultural producers face significant risk as a result of being reliant on environmental conditions for production. Where risk

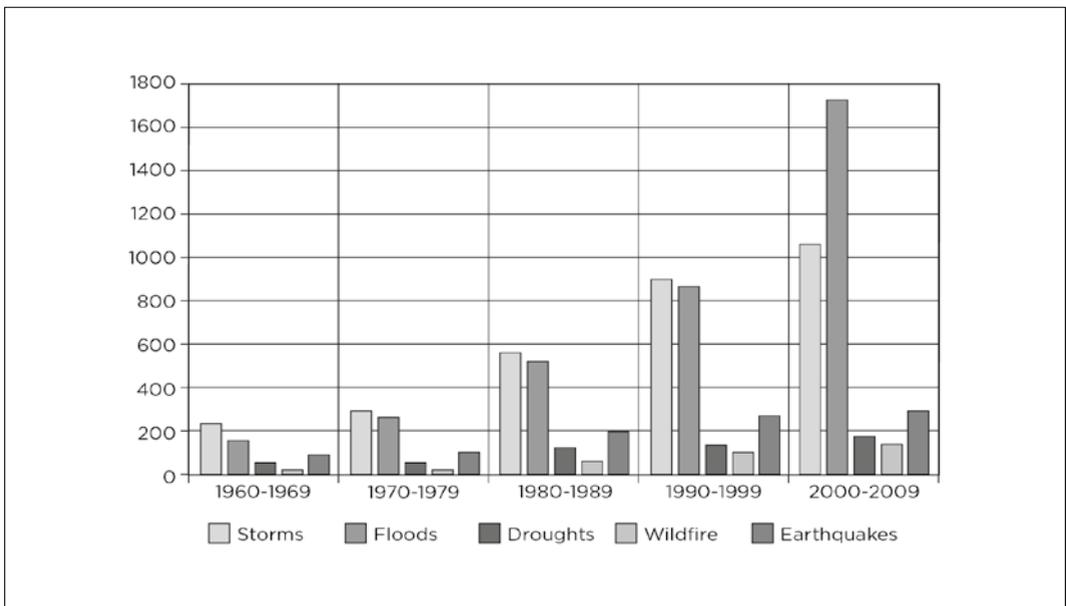
cannot be adequately managed, producers struggle to survive in the face of a negative event and they are more likely to take on less risky investments that are typically also low-yield investments thus restricting growth of the agricultural sector. In addition to incentivising taking on higher-yield investments, being insured also makes producers more creditworthy, making lenders more likely to grant a loan that could be used for a promising investment opportunity (Nnadi, *et al.*, 2013).

Agricultural insurance can come in many different forms. Table 1 summarises the key agricultural insurance types. The list is not exhaustive or mutually exclusive, there are other insurance types and a country will generally have options for a number of these different insurance types.

### 4. Agricultural insurance take up in South Africa

For South Africa's agricultural sector as a whole there does appear to be some take

**Figure 1:** Global occurrences of natural disasters by decade, 1960-2010.



**Data Source:** (CRED, 2015)

**Table 1:** Different types of agricultural insurance

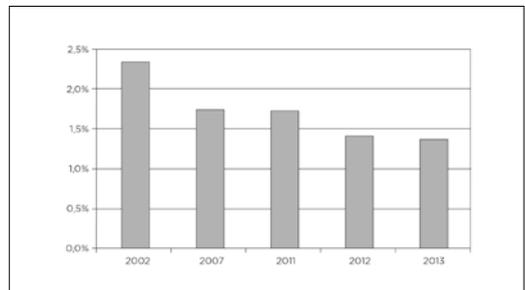
Insurance Type	Risks Covered
Single Risk	One (even two) risks or perils of a non-systemic nature (hail, or hail and fire).
Yield	Main risks that affect production (e.g. multi-peril crop insurance)
Price	Insured amount of production against decreases in price in relation to a determined threshold.
Whole-farm	Combination of guarantees for various products on a farm that can be whole-farm yield or revenue insurance.
Revenue	Combination of yield and price insurance that can cover the whole-farm or a specific product.
Income	Price and yield process together with production costs for the whole-farm and is usually not product specific.
Index-based	Based on indices that are measured by government or third parties, for example, weather based indices and satellite imagery, average yields.

**Source:** (Bielza, et al., 2008)

up of formal insurance schemes, however, this has been declining relative to farm incomes in recent years. In the commercial farming sector, approximately 1.4% of total farming income is spent on insurance. This is according to the national 2013 Agricultural Survey (Stats SA, 2013) that is down from previous years as illustrated in Figure 2, which shows the proportion of farm income spent on insurance for all available years since 2002 where the percentage was more than 2.3%.

In 2010, FinMark Trust commissioned the Centre for Inclusive Banking in Africa to undertake a study on the state of agricultural and rural finance in Southern Africa, in order to better understand the nature and extent of challenges faced in accessing and making use of financial services. This study provides a benchmark for agricultural and rural finance in South Africa and seeks to contribute to making financial markets work for the poor. Although there has been an improvement in accessing a range of financial services among the poor, there

**Figure 2:** Total insurance expenditure as proportion of total income in South Africa's agricultural sector, available years 2002-2013.



**Data Source:** (Stats SA, 2002; 2007; 2012; 2013)

is still a need for more specialised financial services for emergent and small commercial farmers, especially with regards to insurance (FinMark Trust, 2013).

FinMark Trust (2013) reports that smallholder agriculture is a significant component of (urban) livelihood strategies and approximately 30% of smallholder farmers utilise formal insurance services. However, further

investigation reveals that this was primarily personal life insurance cover and only a negligible proportion is noted for agricultural insurance. The report identifies significant financial service needs of smallholder farmers in terms of savings, transmission, credit and insurance services, and highlights the stark contrast between insurance access for smallholder farmers when compared to the commercial farming sector.

A later assessment by the South African Insurance Industry Association revealed a penetration rate for Multi-peril Crop Insurance (MPCI) for commercial farmers of 17% of the planted surface area. For smallholder farmers the penetration rate was deemed negligible (SAIA, 2013).

Mahlase (2013) argues that the reason for the low take-up is largely expensive insurance premiums. In South Africa's case, the main reasons are:

- Unlike many developing countries, the South African Government does not subsidise crop insurance (Nieuwoudt, 2000; Mahul & Stutley, 2010)
- As illustrated, there have been substantial increases in the frequencies of particular natural disasters, specifically floods, storms and wildfires. This increases the risk to insurers, which will lead to higher premiums.
- Potential clients are widely distributed across the country including some remote and difficult to reach places. This raises the transaction cost of insurance, which will push up premium prices (Mahlase, 2013).

There is evidence of schemes tailored for smallholder farmers. FinMark Trust (2013) reports on programmes that offer production loans, crop insurance, production inputs, marketing, logistics and mentorship towards becoming self-sustaining commercial farmers. However take up of such schemes was still very low, at the time of the FinMark Trust study, one of the programmes reached only 272 farmers, involving R155 million in crop loans (FinMark Trust, 2013).

## 5. Conclusions and recommendations

South African farming has experienced a very low take-up of agricultural insurance. Additionally, where it has been taken up, it has been by the commercial sector with no suitable insurance packages for smallholders. This is a huge concern as smallholder farmers are much less able to cope with extreme weather conditions due to under developed infrastructure and the lack of resources to start up again should they suffer large losses. As climate change increases the frequency and severity of extreme weather events smallholders are becoming more and more at risk, hence the incentive for households to take up farming diminishes even further.

Agricultural insurance offers smallholder farmers the opportunity to reduce vulnerability to volatile weather conditions and climate change by allowing the market to carry a portion of the costs (World Bank, 2011), whilst establishing themselves in the sector and adapting to climate change events. It is of importance that agricultural insurance becomes sustainable and remains affordable for smallholder and commercial farmers.

In South Africa there is a clear need for innovation in the industry so as to have access to appropriate and well implemented agricultural insurance in the South African context. Insurance can (and should) be used to complement other risk management approaches. Risk management can help reduce farmers' vulnerability to adverse weather conditions and in this way complement risk transfer schemes such as insurance. For this reason it is important that agricultural insurance initiatives are coupled with other schemes that encourage sustainable farming practices in the face of climate change, such as the Western Cape 110% Green Initiative, The GreenAgri Portal and the SmartAgri Project. The key priority areas under the Comprehensive Agricultural Support Programme (CASP) should also be revisited to ensure that information, technology and advisory services incorporate

resource efficiency. If grant funding can be linked to efficiencies and savings, smallholder farmers may be in a position to reduce vulnerability in the face of increased extreme weather events and afford insurance where risk transfer is applicable.

The main outcome of this study, however, should be to stimulate further research; as a need has been identified in order to ensure the growth and development of the coun-

try's smallholder sector. These farmers need an insurance package that is suited to their specific needs and characteristics and there should be a focused research into designing such a package. If this can be achieved, the risk which threatens the sector can be minimised, thus making smallholder farming an attractive and fruitful activity, leading to improved sector growth and the alleviation of poverty. **AP**

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