

Days in the Life of a Farmer Actuary

Anecdote by Agrotosh Mookerjee

For the last few years, I have had the good fortune of developing agriculture microinsurance programs in many countries in sub-Saharan Africa, South East Asia and the Caribbean. I have developed drought insurance in Kenya, Tanzania, Malawi and Zambia; flood insurance in Rwanda; typhoon coverage in the Philippines; hurricane insurance in Jamaica; and I have advised on crop insurance programs in Uganda and Ghana. The programs I've designed have impacted about 80,000 farmers and the associated agricultural businesses in different countries over the last couple of years. So, a few years after qualifying as an actuary, I haven't yet become a senior pricing, reserving or capital actuary, and my financial remuneration is similar to what an actuarial trainee in London would get. I am, however, lucky enough to call myself a Farmer Actuary!

What is so exciting about being a Farmer Actuary? Well, firstly it is immensely rewarding to be involved in the field of small-scale agriculture. The majority of people in the world are still directly or indirectly dependent on small-scale farming. Seven out of ten people in Africa are small-scale farmers. Although they live incredibly difficult lives, frequently falling into poverty due to various calamities, these hundreds of millions of small-scale farmers are hugely important for feeding populations both within and outside of Africa, earning revenue for both governments and the private sector and leading the overall economic and social development of African countries. So, instead of perceiving small-scale African farmers with a culture of pity and charity, one should respect them for being true heroes in the face of extreme adversities. To quote the slogan of the Zambia National Farmers Union (ZNFU)—“No Farmer, No Food, No Future.”

Working in agriculture is also intellectually very satisfying, from a purely actuarial perspective. I work with historical weather data from rain gauges and satellite sources. I build actuarial pricing, product design, and risk models from scratch, using a combination of quantitative and qualitative data. The technical work is probably only a quarter of the challenge. The larger chunk of the work involves managing different stakeholders on all operational areas and explaining very complicated insurance concepts to both technical and non-technical audiences, which include insurance companies, reinsurers, farmer-organizations, agri-businesses, banks, microfinance institutions, meteorological departments, governments and NGOs. I won't dwell on these technical and operational areas for now, but will recall some highlights of my field-work. Working in the field as a Farmer Actuary has given me some of the most exciting and rewarding moments of my professional life.

Transportation from African cities to remote villages and farming lands has often been a challenge. Many international organizations, including NGOs, spend large amounts of funds on 4x4s, which can drive over impassable dirt roads throughout the year. I've rarely had access to such luxury vehicles, so most of my traveling has been on public buses and crowded vans. Long distance buses in Zambia are a microcosm of the country itself. On some occasions, a bus preacher would board the bus and start delivering an animated sermon to everybody in the moving bus, even as we rattled our way through the bush. “I am a man of God and you are my flock,” the bus preacher would shout over the rumble of the engine, chatter of passengers and blaring music, and everyone would listen to his sermon for the next couple of hours. On another occasion, we missed the last bus back to Lusaka and had to hitch a ride in a broken-down school bus bringing back memories of the bus I took to school in Calcutta! In some

instances I have hitch-hiked between villages, which is surprisingly easy enough for men to do in southern Africa, especially if you're happy to pay a small fee to the driver.

Once, when there was no other transport available, a colleague and I had to walk a few miles under the infernal midday sun of the dry season to attend a farmers meeting. The farmers were astonished to see us arrive on foot, bathed in sweat and dust, and kept enquiring about our vehicle!

Traveling by public transport and working from home are much less acceptable in Africa than they are in Europe. This is mostly due to the prevalence of tricksters or con men in many cities, so it is important to have one's own car and an office in order to build credibility with others. When attending meetings in African cities, we have sometimes had to pretend to call our driver before discreetly looking for a taxi or a local bus! On some occasions, we have taken jam-packed *Matatu* vans to important meetings, in our suits and ties, with children and once even a live chicken sitting on my lap!

Boardroom meetings in the United Kingdom seem a lifetime away and dishwasher-dull in comparison to village community meetings, focus group discussions with farmers, and training of field staff and lead farmers. These field meetings usually take place outdoors, below large mango or acacia trees, with everybody huddled in the flickering shadow of the tree. We sit on the ground, bricks, chairs, and benches dragged from a nearby school. Usually a village headman or local chief says prayers before and after the meeting. We stand up to address the farmers and describe the insurance program in detail, with someone translating into the local languages—Swahili, Kinyarwanda, Tonga, Chichewa etc. Farmers pepper us with questions, which vary from fairly simple to quite complicated questions around how the satellite records droughts, how the insurance takes into account the distribution of rainfall over a season, and so on. While the meeting continues, colorful birds sing above us, unripe mangoes tumble into the crowd, village chickens occasionally dart across, and women farmers feed their infants. Buckets of a local maize brew would be brought out for everybody, which we would drink from tin mugs. Whoever said insurance meetings are boring?

Apart from training farmers and increasing customer awareness about crop microinsurance, these field meetings are very important for ground-truthing, validating, and recalibrating actuarial models. Farmers' feedback on the "bad" years they have experienced, their farming practices, and the agronomical nature of their crops are all crucial parameters for the product design and pricing processes for crop microinsurance. Interestingly, farmers' recollection of the worst droughts and floods is often more accurate than weather data from national meteorological agencies and other sources. Because their livelihoods are so inextricably linked to weather conditions, older farmers would often have a very clear memory of catastrophic droughts which had occurred over 20 years ago. Similarly, feedback on farming practices and the nature of different crops is very useful, because surprisingly little accurate public data is available on these areas, especially at a very local level, which is important for microinsurance products.

While in the field, I have sometimes had to attend teleconferences in the most unexpected of places. In Rwanda, I once had to attend an urgent technical call with a European reinsurer from a car-park in Kigali. I was immersed in the meeting, inside a car with rolled up windows, hunched over my laptop, when a soldier brandishing an automatic rifle knocked on my window. "What are you doing for so long in this car?" he asked coldly when I rolled down the window. "Talking to these guys in Switzerland about insurance," was my reflexive answer, which seemed to confuse the soldier who walked away, shaking his head. Another time, I had to attend a call with an organization in Armenia while I was working in a

small village in Zambia, and I had to climb a large boulder in the middle of a maize field to get a strong enough phone signal to continue the conversation.

Over the years I have learned about the various complexities of small-scale farming in Africa. Apart from the usual economic and actuarial factors, there are many interesting issues which are relevant for crop microinsurance schemes. Who owns the land? What are the traditional land rights and legal property deeds? How do farmers access seeds, fertilizers, pesticides and other inputs? Who finances the farmers? How do agri-businesses and cooperatives affect small-scale farmers? What farming practices do the farmers follow and what are the environmental and health impact of these? How do women and children participate in farming? What is the impact of mechanization of farming and of conservation techniques? There are hardly any straightforward answers to these questions. The debate and discussion around these issues are interesting both for understanding how insurance can be relevant for small-scale farmers, and also for recognizing that insurance on its own is certainly not a silver bullet for addressing food security needs. It can, however, be one of many tools in a holistic approach to sustainable development in Africa.

Because insurance is closely linked to other areas of the agriculture value chain, I am often asked to assist farmers in other unusual ways. A farmer cooperative from West Africa wanted me to arrange for agricultural loans to about half a million farmers in Mali and Ivory Coast. They insisted that I could help, because the insurance would reduce the lending risk and because I lived in the United Kingdom, I had a good chance of bringing in British banks! Farmers in Malawi and Tanzania have sent me requests for fertilizers and farming implements and have asked me to advise them on when they should plant based on the historical weather data. A taxi driver in Nairobi heard about my work and asked me for advice on growing tomatoes, as he was planning to grow some vegetables in his ancestral land in the village. Meteorological departments of several countries wanted me to supply them with weather stations and rain gauges. I have also been asked to develop insurance products for extraordinary groups of farmers such as sea weed cultivators in Philippines, honey collectors in Rwanda, and bird trappers in Uganda. In most of these cases, I had to explain the limitations of my area of expertise and recommend other organizations which could help, but these experiences also revealed the importance and interdependency of various areas in the agriculture value chain.

Perhaps the most rewarding moments of my work have been the appreciation expressed by farmers. In Uganda, an elderly farmer blessed us with tears in his eyes for attempting to develop an insurance program for his half an hectare of sorghum, as he had experienced droughts for over fifty years. We have received similar emotional blessings and cheers from farmers in Malawi, Tanzania, Zambia and Rwanda. On interviewing farmers who received claim pay-outs, even as low as \$20, farmers explained how these relatively small amounts of money would make a difference to their lives in the aftermath of a drought or a damaged harvest. The appreciation and encouragement from farmers is very stimulating. It confirms that the work we're doing is meaningful and it is making a difference, no matter how small, in the lives of small-scale farmers. It is through hundreds and thousands of such small differences that there is the chance of impacting and transforming lives and societies. It is indeed a privilege to be part of this challenging journey in agricultural development and to work with farmers and associated organizations and governments. I hope to continue calling myself a Farmer Actuary for many farming seasons to come!