Happy New Year and a big welcome to the first edition of the Kirkhouse Times of 2022. This edition is dedicated to the travels undertaken by KT administrators, consultants, students and PIs over the past few years. Travel has always been an integral part of the KT funded projects; it is an opportunity for the KT staff to meet the PIs and their teams, to visit project fields and to address any issues in person as well as to enable our partners or students to attend training opportunities. Furthermore, it enables all PIs across projects to carry out fruitful discussions, socialise and share ideas.

Unfortunately for the past 2 years, due to COVID-19, KT staff have not been able to venture out on visits and we hope this newsletter edition would somehow help reminisce the past travels until we meet again! We thank all of the contributors of the Travel Edition of KT Times. Happy Reading!

**The Travel Edition Part 1**

An alien scholar at the University of California, Davis

Serah Njau

A PhD student in Plant Breeding and Genetics in University of Embu, Kenya, got an opportunity to travel to United States of America to enhance her PhD training in the most prestigious university in the USA. The idea was well thought among my supervisors and planning was put in place.

Being my first time to travel to the USA, I was filled with mixed reactions – excitement and fear of unknown. The time was running fast and it called for quick application for the USA visa for travelling. Out of blues, there was an outbreak of COVID-19 pandemic. It disoriented all the plans and everything was null and void. Visas application became complicated due to the travelling restrictions that were imposed on different countries borders in bid to control the transmission of the virus. To cut the story short, I was able to get my visa.

After getting my visa, that was when it dawned on me that I was travelling to the USA. I started putting my travelling documents in order and getting COVID-19 test prior to travelling. Finally, the long-awaited day came – 16th September 2021. I was escorted by family and friends to the airport. It was the hardest moment for me due to the anxiety and uncertainty of the new environment. Anyway, I had to bid them goodbye two hours prior to the flight departure time in order to check in with the security system in the airport. I could feel loneliness but I had to gather courage to keep me going. During the checking in process, I managed to share some words with a gentleman who had lived in the USA for the last one decade and he gave me a lot of encouragement.

The flight from Nairobi, Kenya to Sacramento in the USA was 19 hours long. During the flight I kept on checking time to see how far we were from our destination. The time kept on moving and it was only one hour to the destination. Finally, I landed on Seattle International airport where I was to connect my next flight to Sacramento.
It was totally a new environment for me in terms of sceneries. Everybody was rushing in different directions. The airport is big and we were supposed to connect to the next flight using a train. You need to understand the train heading to your flight to avoid getting lost. By good luck, I found a lady who was connecting to the same flight. She was able to lead me to the right place.

After one hour we took off for Sacramento. It was a 45 minutes flight distance. My host family picked me from the airport and we headed to Rancho Cordova which is a town in Sacramento. The lady comes from Kenya and we could speak some Swahili words. This helped me to relieve my tension and mindset was different.

The most outstanding thing was the well planned and constructed infrastructure that ensured that we reached home within the shortest time possible. The family was very welcoming. They were very excited to see me. I stayed with the family for five days and I moved to University of California, Davis where I was to stay for the rest of my visit time.

When I moved to UC Davis, I was able to meet my supervisor, Prof Paul Gepts, Lab assistant, Dr Travis Parker and other research fellows in the lab. They were very welcoming. We had a welcoming party where I was introduced to all the research fellows and the projects they are working. It was fortunate that I was able to get housing some few metres away from the lab.

The UC, Davis, accommodates students from all over the world and has ~38,000 students. The environment is very conducive for learning. It has 150,000 square feet for fitness centre, 25 division 1 sports and 800 student clubs and organisations. In addition, it has five coffee shops and 21 eatery outlets. The services are outstanding and highly accessible to students. UC, Davis is a tight-knit community. The accessibility of the campus from downtown and friendliness of the students and staffs was all what I was looking for in UC, Davis. The school is well landscaped such that the students lounge on the grass with their friends either as they do group discussions or just relax.

My favourite campus tour stop was Quad. I was impressed to see students taking naps on the hammocks and I could tell that there is much comfort when resting there. Hammocks have been always voted by UC Davis students as the best place to nap. The hammocks are really relaxing because you get to enjoy the beautiful scenery of grass and trees. They are scarce and students always queue to get one. I'm not an exception.

UC Davis is generally committed to sustainability, growing a green campus. From the arboretum to the numerous farms and greenhouses located throughout campus, the university is a living laboratory dedicated to developing, testing and providing solutions to address the world’s most pressing issues of climate change. There are a lot of outdoor places to hang out and study. The most interesting thing I have discovered about UC Davis is that there are more bikes than the students. The riding culture in Davis is amazing. I did not think that I will be able to ride since I did it long time ago during my childhood, but due to the well-maintained infrastructure I was able.
The university has provided the students with ample parking for their bikes making it safe and peaceful for the students to attend their classes. The UC Davis classrooms are wonderful places you long to be and well equipped with learning facilities. The seats are adjustable to suite your comfort. The rooms are fitted with charging ports for the electronic gadgets and illuminated well with lights. Both the lecturers and students observe punctuality. In my first class, I was surprised to see the students arrive for the class 10 minutes before and wait at the door. The lecturers are very friendly to the students and they always look forward to academic excellence.

For my project, I was allocated a greenhouse to plant my working population. The greenhouses are within the university and very accessible using the bike. They have been built with high levels of technology. Air conditioning, lighting, watering and nutrients regulations are highly maintained for proper functioning. The students are supposed to learn the project and the greenhouse assistant offers all the help needed. My crops were able to grow healthy and I was able to achieve my objective.

UC Davis is among the best universities for studies and research. They have very big library that can accommodate more than 10,000 students. It is equipped with learning materials such as books and computers. The laboratories are fully furnished with the new technology facilities making it easier and enjoyable to work. The recreational facilities within the university makes life out of classrooms enjoyable and more productive. Students understand work without play makes Jack a dull boy and therefore, they always secure time to exercise and have fun.

During weekends and holidays, we always organise with friends for activities such as travelling, hiking and watching movies. The activities help us to interact with each other and have fun. UC Davis is the place to be for me as far as my happiness is concerned. It makes me feel happy and comfortable away from home due to the conducive environment provided. The memories remain fresh and vivid in my mind and I look forward to a longer stay.
I had recently joined the Kirkhouse Trust (KT) having spent more than 14 years in Leukaemia research. My childhood dreams were to contribute to finding cures for Cancer. Hence my previous research involved the use of molecular techniques to understand the genetic basis of a specific childhood leukaemia. In addition to the research, I gained skills in laboratory/project management as well as student mentoring.

I had now reached the stage in my career where I wanted to share my skills. I was also attracted to how molecular techniques had an immediate impact on livelihoods. The use of Molecular Assisted Selection (MAS) to enhance the breeding of common beans and in so doing this helping to provide a sustainable income for the small holder farmers in several countries of Africa was the career direction that was aligned with my aspirations. I was born in Africa (Malawi) and having found out about the KT vision and the opportunity to join the team, I couldn’t resist!

One of my first tasks was continuing the tradition of KT in organising the African Bean Consortium (ABC) annual meeting in Kigali, Rwanda. These annual meetings bring together those Principal Investigators (PIs), students and supporting staff the charity funds to share their knowledge and ideas in improving the common bean to diseases that affect this crop in their specific countries.

For me, the trip was a great opportunity to meet all those I had been communicating with via email as well as the people I did not directly interact with but were part of the respective teams. Organising the trip had its challenges. Firstly, it was my first large scale meeting to put in place and secondly, I was organising it from a distance. Nevertheless, I was excited as I had read and understood the projects I was looking after and was eager to meet the participants.

KT started the trip with a visit to the Selian Agricultural Research Institute (SARI) in Arusha, Tanzania. The charity was introduced to the Director General, Dr Joseph Ndunguru and his team. Dr Ndunguru described the functions of the Institute and its successes. There was also an opportunity to view the institutes’ greenhouse, various bean varieties and taste a drink made from mixing bean and maize flour. This is a nutritious drink that we were told was given to children in schools.
The KT members then travelled to Kigali where they visited the team led by Annuarite Uwera based at the Rwanda Agriculture and Animal Resources Development Board (RAB). A tour of facilities at the Rubilizi research station was provided where the PI described the teams’ progress.

The trip culminated in RAB hosting the 13th ABC Annual Meeting which brought together the other teams funded by the charity from Uganda, Ethiopia, Tanzania, Kenya and Zambia to share their research advances over a 4-day conference. The days were packed with many presentations, and I noted a general enthusiasm in the participants. The presentations were engaging and thought provoking. In addition to the PIs project accomplishments, there were presentations from MSc and PhD students. Here again there was evidence of the talent at hand. There were also opportunities for these students to forge new friendships and, exchange knowledge and ideas. I was given the opportunity to chair a technical session with the technicians/students. I thoroughly enjoyed the dialogue. It was particularly exciting to see the next generation of scientists engaging in discussion. A new generation of bean breeders for the African continent was clear to see. I would certainly like to encourage the young scientist/technicians/students to find more platforms for networking because they have a lot to offer.

West Africa Cowpea Consortium (WACC): KT Visit to Africa 2010
Colin Dexter

West Africa Cowpea Consortium (WACC): KT Visit to Africa 2010

Having now been on many trips to Africa for annual meetings and project visits I have chosen to write about one of my earliest experiences. The trip in 2010 was only my second trip. I had been working with our partners in Africa for two years but we had only met once and I had only visited one of the projects. So it was still very much a new experience for me and very rewarding.

Project visits

Federal University of Agriculture, Makurdi (UAM)

Our first visit was to a project that was in its first year and had only recently been kitted out with a new lab: the UAM in Nigeria. The project PI was then a recent PhD graduate, Dr Lucky Omoigui. Activities were well under way, which gave us the opportunity to see the pot trials and field trials they were doing as part of the project. We were even able to carry out a bit of troubleshooting in the lab. Everyone at the university made us feel very welcome. The project has now successfully released Striga and Alectra resistant cowpea lines that have been disseminated in Nigeria and other West African countries.
Clockwise from left; The newly kitted out lab at the UAM; KT Consultant, Dr Robert Koebner gives advice on the use of hPAGE in molecular breeding; We were made to feel very welcome and the university showed how important the project was to them by holding a large press conference where traditional clothing was presented to the KT representatives; Field of the new Striga and Alectra resistant lines still being developed at UAM.

L'Institut de l'Environnement et de Recherches Agricoles, Burkina Faso (INERA)

The second visit was to INERA in Burkina Faso, one of the founding projects of the WACC and the first to release new lines, with resistance to Striga. At the time the PI was Dr Jeremy Oueraogo but Dr Benoit Batieno has now been the PI for a number of years. Their lab was already fully operational and being used to train new members of the WACC. It was also an opportunity to see the rest of the facilities and fields as well as take in some of the local culture.

From left to right: The first time I saw Striga, other than in pictures, was on cowpea pot trails at INERA; The old screenhouse at INERA; One of the new resistant varieties being grown by a local farmer; Poorer quality cowpea was still being grown by many of the farmers in Burkina Faso. We were told farmers were reluctant to change to the new varieties, even though they could see they performed better in the field.
The project visits give KT a chance to assess the facilities available to the projects. At INERA we saw that the screenhouse they had was in very poor condition and as a result KT were able to fund a new screenhouse for the project.

It was useful to see the trials and lab work being carried out at INERA and a pleasure to meet the people involved. Otherwise all we could rely on were reports and email communications, which can never give the full picture and often KT is not aware of all the progress that has been made.

There was also time to see some of the art work of Burkina Faso.

WACC Annual Meeting
The Annual Meeting was held in Senegal, where we had recently started funding a project.

Dr Diaga Diouf from Université Cheikh Anta Diop helped with the organisation, for which I was very grateful. Without assistance from our colleagues in the WACC it would be very difficult for KT to hold the meetings.

The meeting agenda started with presentations by the PIs on their project work. These prove very interesting and give KT representatives a chance to ask questions and find out more about the activities. We often find that more is being achieved than has previously been reported. Time is also given to training and discussion sessions. Not being from a plant breeding background these sessions have been very helpful for me to be able to understand the work involved. At this particular meeting a lot of the training and discussion was dedicated to the use of molecular markers in plant breeding. There was also a session on phenotyping for the different constraints being studied by the projects. All of which were of great interest and use to me. The meetings also give me the opportunity to get to know the project team members, which is not only a pleasure but has made my job much easier.

Following the meeting I was able to attend the World Cowpea Research Conference and learn about other cowpea projects taking place across the globe and meet some of the scientists well known in the field.
Penniless in India – a STOL adventure

Robert Koebner

In November 2016, a KT party (Ed, myself, Fleur and Prem) visited various sites in Rajasthan (India) to explore the potential of setting up the Stress Tolerant Orphan Legumes (STOL) project. My role was to team up with Dr Davendra Kumar, a scientist at CAZRI, while Ed and Fleur travelled with Prem. Little knowing what was about to happen, I paid my hotel bill before retiring to bed as I was expecting to leave Jodhpur early the next morning. Late that evening, and quite unbeknownst to me, the Government of India announced that after midnight, 500 (US$7) and 1,000 (US$14) rupee banknotes could no longer be used, so overnight, all of the money left in my wallet suddenly became worthless. I only found out about this the next morning while reading the newspaper in the hotel lobby. When Davendra arrived, I told him that (like almost everyone in India that morning!) I had no money, so I needed to get to a bank to change money; but the scene at every bank was the same - long lines of people and locked doors.

For the next few days, I was totally in Davendra’s kind hands, and fortunately he turned out to be very resourceful, somehow managing to obtain sufficient small value banknotes (the largest value valid note was 100 rupees, worth about US$1.40) to cover our many cups of sweet milky tea and hot curries.

A particularly memorable highlight was a visit to the ICAR National Research Centre on Camel, where for the first (and so far only) time in my life I had the opportunity to drink camel milk - which is apparently much healthier than cow milk thanks to its higher content of insulin. Actually, it tasted just fine!

After several days on the road, our two parties finally met up. The money problem for Ed and Fleur, was handled by Prem - somehow - although I recall that the situation was less dire for them, since Fleur had remembered (as I had not) to clear her credit card for use in India before she left the UK. To celebrate our coming together, we were all invited for breakfast at Davendra’s house, which was a very pleasant way to end an eventful trip.
Field Day Visits
Issa Faye

In framework of the STOL project in Senegal, two field days were organized during the first week of October 2021 to popularize new legume crops and their varieties. They took place in Darou Diakhour district, Louga and Kahi district, Kaffrine where were trialed mungbean, bambara groundnut and mothbean using a participatory selection approach (Tricot) in collaboration with the Cooperative of farmers named COPROSEM “Coopérative des Producteurs de Semences” of Kahi and the Cooperative of farmers named COPAKEL “Cooperative des Producteurs Agricoles de Kelle”.

9:00 - 10:00 am: Registration of the participants

More than 100 farmers including 50 women with different ages participated in the field day. Participants included representatives of national extension Agency (ANCAR) and Regional Agricultural Directorate (SDDR) in both locations.

10:00 - 11:00 am: Participants discussed the new crops and potential utilizations with grains and fodder

Participants went around the plots of the different crops to discuss the productivity, potential utilizations, interests to adopt and grow the proposed new legume crops. This was the time dedicated to interactions between the research team, farmers and other participants. We brought information to them about nutritional features and benefits that potentially can be attained with the crops.

Like cowpea, the new crops attracted women farmers, they showed a great interest to receive seeds for the next rainy season. They said they will be happy to be more involved in the project activities.
11:00 - 11:30 am: Wrap up (closing remarks) and departure

Dr Issa Faye providing closing remarks to participants.
The Travel Edition Part 2

Welcome to Part 2 of the Kirkhouse Trust Newsletter, Travel Edition! Please read on to discover some more of the travel adventures from our contributors and we finish off with an exciting game of Snakes and Ladders! Happy Reading until next time!

KT’s Mobile Lab
Colin Dexter

I am writing this article to acknowledge the accomplishments of the Mobile Lab, which has been run by the Cocoa Research Institute of Ghana (CRIG), in New Tafo, Ghana, since 2007. The Mobile Lab has served a large number of students and scientists across Ghana and the achievements of those responsible deserves recognition. Dr Jemmy Takrama was the initial force behind operations of the Mobile Lab in Ghana, until 2017, when Ms Margaret Acheampong took over command.

The Mobile Lab's first trip

The Mobile Lab started its life as a Royal Air Force Incident Control vehicle and was purchased and converted into a laboratory by the Kirkhouse Trust and shipped to Ghana to train students and scientists and give them the opportunity to carry out molecular work as part of their research. Once kitted out and serviced there was the challenge of transporting it to Ghana. Measuring 6.9 metres x 2.44 metres x 3.82 metres, and with a total weight 14,730 kg it was not going to be easy.

The vehicle started its journey at the John Innes Centre, Norwich and travelled over 100 miles by land to Tilbury Docks, on the River Thames near London. From here it was loaded onto a cargo ship to travel 44,000 nautical miles (81,488 km) to Tema, Ghana and another 65 miles to CRIG. A journey that would have taken about 3 weeks.
Since these beginnings the Mobile Lab has been used to train over 11,000 students and scientists, focusing on DNA extraction and the use of molecular markers with PCR and hPAGE equipment. The Mobile Lab has attended schools and universities across Ghana, including Accra, Kumasi and Tamale, and as far north as Navrongo, as shown on the following map.

Originally the practical work was carried out in the truck, but this allowed a maximum of twelve students at a time. The laboratory has increased in popularity and some of the visits now have to cater for hundreds of students. The technicians from CRIG now take the equipment out of the vehicle for training to be done in the university laboratories. Lectures are also given by the managers of the Mobile Lab.


1The PCR equipment increases the amount of DNA and then breaks it down into smaller sections. hPAGE then separates out those sections on a gel, in a way similar to chromatography; this will indicate whether the gene responsible for a trait or resistance is likely to be present.
It has been a pleasure to meet those involved with running the lab, both the managers and technicians. Their enthusiasm for the lab is clear. A lot of credit has to be given to CRIG who have helped, administratively and financially but have also allowed their staff to spend a lot of time out with the Mobile Lab giving training. Initially this was just the manager but now the technicians are also CRIG employees. I have also enjoyed ‘testing’ the chocolate produced from the cocoa beans at CRIG!

On my last visit we met a couple of people who had received training in the Mobile Lab when they were students and were now working at CRIG, hoping to begin a career in science. They were very pleased to have the opportunity to experience the practical side of molecular research and said that encouraged them to follow a route into science. Potential PIs of the future!

However, the vehicle has been used as a lab for over 14 years now and was used as an RAF vehicle for a long time before this, it is therefore feeling its age. It is a testament to all those working on the vehicle that it has lasted so long in good working order but the last time we visited we saw the wear on the vehicle and heard about a number of mechanical issues. It appeared the vehicle was coming to the end of its life. However, Margaret and CRIG have managed to arrange for the vehicle to be mended and hopefully will now be able to carry on its good work for a few more years.

The journey continues.

A group picture of some Applied Biology students from UDS, Navrongo who were given training in the lab, 2018.
Birth of the Stress Tolerant Orphan Legumes (STOL) Programme
Tony Bowes

The “idea” of STOL was first conceived back in 2011. This idea came from Sir Ed Southern, who asked the question “Could underutilised crops be grown as “backup” crops when main crops fail, due to increasing temperatures and more erratic rainfall associated with climate change”. This question was derived from a series of projects researching the yield of underutilised legume crops that KT had been funding at the University of Agricultural Sciences, Bangalore (UAS, B). These projects subsequently reached a natural end point, and as a result, STOL was put into motion.

With very little previous research having been done on these crops with regards to heat and drought tolerance, it was decided that the appropriate research was required. UAS, B was an institution seen as being a good starting point for this research, due to it already having several scientists based there who had extensive experience working on underutilised crops, such as horsegram (Macrotyloma uniflorum), moth bean (Vigna aconitifolia), Dolichos (Lablab purpureus), and cowpea (Vigna unguiculata). Therefore, work began on trialling these crops in hot, dry conditions to see how they performed.

Alongside this, KT noticed research being carried out at ICRISAT, Hyderabad, India that was monitoring the plant water budget in lentils, and asked ICRISAT if they would be interested in carrying out a similar investigation on the STOL crops.
However, shortly after the project’s inception it became apparent that obtaining STOL germplasm was particularly challenging. Seeing this as a major roadblock for the STOL programme, KT investigated various avenues for getting hold of STOL crop germplasm and sharing it amongst its partners.

In order to gain access to STOL germplasm, KT approached ICAR-NBPGR in India, who had large quantities of all STOL germplasm. Eventually, it was agreed that germplasm could be shared with all STOL partners, both in Africa and India under a negotiated memorandum of understanding (MoU).

With the agreement in place, this meant that the crops could now be trialled in various hot, dry regions of Africa. Therefore, in 2018 KT set up field trials in suitably hot, dry regions of Africa (and India) and so STOL as we now know it, was born!
Snakes and Ladders: The Ups and Downs of consortium meetings and visits by The Kirkhouse Trust to Africa and India

3. Meet up with project teams for the first time. Get a boost to square 18.
5. Enjoy the local foods, such as those made from orphan legumes and cakes. Get a boost to square 22.
12. Discussions with the PI show the amount of progress being made. Get a boost to square 36.
13. All members of KT travel team requested to check out the hotel. Fall to square 2.
17. Enjoy the local STOL dishes and cakes available in the hotel in Benin! Get a boost to square 34.
24. Take a trip to Victoria Falls and go on a Safari in Tanzania! Get a boost to square 39.
26. Flight cancelled, as happened on a number of occasions, e.g. Benin in 2019. Fall to square 8.
28. News of PI promotions and PhD and master’s graduations. Get a boost to square 42.
30. KT sees newly released varieties in the field. Get a boost to square 52.
41. Enjoy local dancing display and entertainment. Get a boost to square 55.
48. Mix up with the passports. Two members of the KT team get their passports mixed up. Fall to square 29.
51. Project visits and Annual Meeting went to plan and were a success. Get a boost to square 63.
58. Visit to the doctor required. A number of illness and injuries have occurred on our trips but none of them too serious. Fall to square 44.

Contact us: info@kirkhousetrust.org or visit www.kirkhousetrust.org