



**ONLY A SHOVEL
IN THE HAND**

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Chronicles of the journey: Kasisi Agricultural Training Centre



Cover photograph: Brother Paul standing by the Mercedes Benz Truck during his early years at Kasisi Agricultural Training Centre

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Foreword:

Fr. Claus Recktenwald, SJ

KATC started 50 years ago. In 1974 Brother Paul began to train the first young couples from the villages around. Bush had to be cleared and houses to be built. Out of this small grain within 50 years an institution has grown, giving work to about 80 employees and working in 5 Provinces within Zambia. The goal from the first day on was to improve rural communities and the livelihoods of small-scale farmers. Another not less important goal has been added in the 1990s – promoting sustainable organic agriculture. Both complement each other and were found in 2015 with the encyclical letter of Pope Francis *Laudato si'* a strong recognition of the teaching of the catholic church. The motto for this 50-year celebration is inspired by the practice of KATC and the teaching of Pope Francis: "Caring for our Common Home and improving Livelihoods".

The care for our common home indicates that all people share this one planet. We have to work together to face climate change and to take action against the destruction of the earth. At KATC over the decades a large number of different people have worked together: Jesuits, long- and short-term collaborators, volunteers, and donors. All put their efforts together to build KATC to what it is today.

Therefore the first section of the book is dedicated to those people coming from different cultural and religious backgrounds and their contribution to building KATC. The second section of the book highlights the different types of training that were offered over the years and how the centre tried to adjust to different needs to contribute to the betterment of livelihoods in rural Zambia. The transition of KATC to organic agriculture and its contributions find a place in section three. Section four focuses on the work with farmers and communities through the extension approach and the changing life realities they are facing. Finally, the last section traces the development of the institution most importantly the demonstration farm and production Unit at KATC.

Fr. Eddie Murphy, SJ encouraged Brother Paul for many years to write down the history of KATC. However, it took over 10 years before Paul could bring to paper some lines about the starting of the Centre. Brother Paul ran KATC for 46 years. There was no urgent need to write down a lot because he was the institutional memory and the oral tradition was very strong. With the death of Brother Paul things suddenly have changed. The realisation of the strong need to write down the history of the institution, to preserve the memory of those who have been there for a long time led to the production of this work. This booklet is a starting point. Many stories worth telling have been left out, and other secondary things are over-emphasized. Nevertheless, the book attempts to compile from different written and oral sources the story of the centre and of those who are its protagonists.

May this booklet beyond being a little history strengthen our identity and inspire us even in the years to come!

CHAPTER I

FACES OF KATC

Visionary and Son of Ignatius

Leonard Chiti, SJ

Brother Paul Desmarais, RIP

Thirty years ago in February 1994, I worked with Brother Paul Desmarais as part of my formation programme. I was living in the Jesuit community at Kasisi and this afforded me plenty of opportunities to watch Brother Paul and talk to him.

One of the earliest conversations I had with him was about how he started the Kasisi Agricultural Training Centre, KATC. He said to me all he had was a shovel and a piece of undeveloped land.

At the same time, he was motivated to help the poor farmers around the Kasisi area. Thus began a project intended to help the 'souls' of Kasisi and thus encounter God in the process.

In the beginning Brother Paul worked with the now 'discredited' green revolution of the 1940-60s, which among other things postulated that with the use of artificial fertilisers, chemicals and commercial seed one could improve one's yields, be assured of food security at household level and earn an income from the sales of surplus produce. This approach to farming had been successful in some parts of the world and was deemed to have the potential to improve the standards of living of poor people elsewhere.

For a while Brother Paul pursued this industrial model of agriculture. However, somewhere along the way Brother experienced a 'conversion' and now believed the future of society lay in transitioning from industrial agriculture to organic model. I had the good fortune of witnessing firsthand how this worked when I worked at the Jesuit Centre for Theological Reflection, JCTR, which at the time had partnered with KATC to lobby the government of the Republic of Zambia, GRZ, to introduce legislation aimed at promoting organic farming methods. Obviously this campaign was beset by serious hurdles, not least the government policy then and now of providing farming inputs such as fertilisers and commercial seeds to small scale farmers, SSFs.

The challenges notwithstanding Brother Paul remained resolute and steadfast with his vision of a society freed from harmful production models and sustained by sustainable agricultural approaches. One of the successes of his endeavours is the diploma programme now being offered by KATC and supported by the GRZ.

Earlier in this piece I called Brother Paul a visionary and a son of St Ignatius. Let me explain why. I believe at the time Brother Paul shifted from industrial to organic farming that there were very few in Zambia who saw this as beneficial, especially to small holder farmers. Organic agriculture was comparably cheaper because it used no artificial fertilisers. It was environmentally friendly. To see something no one or very few saw is being visionary. To persist when there is little evidence that something works is the mark of a 'prophet.' Brother Desmarais did demonstrate this in the nearly 50 years that he spent developing an undeveloped piece of land to what is now KATC, a complex operation that continues to minister to poor people, builds capacity of farmers in alternative and sustainable farming methods and has now ventured into generating its own income from marketing the much sought after organic products.

I called him a son of St Ignatius because right from the get go he believed that by committing his life to supporting and journeying with poor people he was participating in the work of salvation. This is true of Ignatian followers, founder of the Society of Jesus of which Brother Paul was a member, who believe they encounter God in ordinary events of life and by committing themselves to the service of God through serving people that they are participating in the liberating grace of God. Brother Paul left a legacy of what Jesuits call 'contemplatives in action.' As we commemorate the golden jubilee of KATC we can do well by imitating him.

Brother Paul, a Pioneer of Organic Farming

Zio Mwale

Early Life, Becoming a Catholic Brother



Brother Paul watching cattle graze on napier grass at Kasisi Agricultural Training Centre

Brother Paul was born on 9 March 1945 in Pointe-aux-Roches, near Windsor, Ontario Canada, where his family had been farmers for three generations. Already when Br. Paul was in his fourth grade, he went to visit Windsor where he had a chance to see and meet several religious communities, there he picked up a couple of information brochures to help him understand their work. Even though he was quite young at the time, he hoped to enter the novitiate of the Jesuits as a brother. But Why a Jesuit? For him, they were the closest to his home and he was also happy with them. After completing Tilbury District High School, which he visited from 1958-1963. Immediately after, in 1964, he entered the novitiate in Guelph. Even during the novitiate he engaged in farming together with the brothers to provide for the needs of the house. After his first vows he stayed in Guelph and enrolled for a bachelor's degree in Agriculture, which he did at Guelph University from 1967-1971.

Arrival in Zambia and Start of KATC

Brother Paul first arrived in Kasisi in 1969 during the summer holidays of the University He stayed for a few months and returned to Canada. In 1971, he came back after completing his bachelor's degree. He was 25 years old when he came to Zambia, He was young, it was not difficult to adapt to another culture, and the Jesuit community was almost all white. He spent four months learning the local language. The Provincial Fr. Counihan asked him to help the local farmers around Kasisi. Paul started farm visits to the neighbouring villages, and he also visited the Ministry of Rural Development (now the Ministry of Agriculture and Fisheries). The people in the villages accepted him easily and Paul started to gather data and classified his perspectives of the village situations.



Brother Paul and farmer soon after arrival in Zambia, in 1974

A local committee of influential people and specialists was formed, and they met several times with Br. Paul. They acted more as representatives in the beginning, later advising and taking part in the decision-making process.

“Brother Paul also met with the local village headmen and local council to offer information on what was taking place, his daily individual contacts with the local people were considered extremely important in the legitimation and diffusion of the program.

In the early stages of this whole process, Brother Paul visited several agricultural training schools, centres, settlements, and schemes to gain an understanding of different approaches to rural development used in the country, throughout that time he had a pervading atmosphere of reflection as to philosophy of development and objectives at which he could aim.

Soon he realised that the approach of farm visit was not intense enough to have a huge impact. Therefore he started planning a two-year residence course for ten families. A German group under the supervision of Fr. Prokopt and supported by Misereor had started some land clearing. Paul took up this work and spent the first year up to 1974 clearing the bush and burning bricks for the first houses.

Joyful and Approachable

Brother Paul had the ability to work well together with very different persons, Jesuits and Non-Jesuits, Zambians, Volunteers and Donors from all parts of the world. They brought in their talents and expertise and helped Br. Paul to develop the centre. Among them was Fr. Donal McKenna who came in 1982 and set up a workshop for appropriate technology, which was experimenting and building tools and equipment suitable for production and use in rural areas. Fr. Roland Lesseps joined KATC fully in 1990 after having completed his professional career as a professor for biology. Already in the years before he worked with Br. Paul, promoting Agroforestry.

With many of them Paul had decades long friendships. After every three years, he would return to Canada and stay with his brother



and sister, who are also farmers. That gave him time to rest and also to see the type of farming that was done in Canada. From these journeys he brought back many ideas and adapted them to the Zambian conditions.

Visionary and Organizer

Brother Paul used to say jokingly “I started KATC with nothing else than a shovel in my hand”. Paul had an eye for the needs of the farmers and what next steps could work. He was also a hard worker, strong in planning and organisation of new initiatives. This made the organisation grow tremendously over the years. The organisation has grown from 2 to over 80 members of staff.

Today KATC is involved in training, extension, advocacy and lobbying, production, research, publications, projects, and communications.

It has a dam, which is also used by surrounding farmers and fishermen, a production unit with 125 ha of irrigated land. A beef and dairy herd, a piggery, dairy and grain processing. The extension team runs projects in 5 Zambian provinces. A training centre with up to 50 bed-spaces offering 5 day training programs and a diploma in Agroecology for hundreds of trainees every year. A number of publications on organic production have also been produced.

Organic Conversion

In the first years Brother Paul taught agriculture that relied on chemical fertilisers, pesticides, improved seeds and mechanisation in short the principles of the green Revolution, since that’s what he learned during his studies in Guelph. But the experience was that this conventional way of farming was not sustainable. Farmers often got loans to finance these expensive inputs, but a slight delay in the rains or some unforeseen infestation would leave these farmers unable to pay back their loans. Chemical farming left the land hard and dry. Tractors sat rusting for the lack of parts. Despite years of trying, yields were still way below European and North American standards and farm families seemed to be eating less and less. In the mid-1980s, Fr. David Shulist, SJ, asked, “Why not think about organic farming?” This was a starting point to explore this interesting idea. Back in Canada in 1988, Brother Paul visited organic farms in Ontario. Back in Zambia Brother Paul and the KATC team started experimenting with organic practices and in 1991 they converted completely to Organic Farming, showing how to develop means of sustainable farming by replacing fertilisers and insecticides with nature’s products.

When Brother Paul began talking about sustainable eco-agriculture and organic methods in the early 1990s, not everybody was buying it. From farmers to government agricultural extension workers, everyone thought the Jesuit was trying to drag them back into the past. Zambians craved exactly the kind of success they saw North American farmers enjoying using a full range of chemicals and technology.

By this time animal manure was seen as a waste product and were just dumped at the edges of the animal farms. KATC was among the first ones to pick it as a valuable resource.

Little by little the perception of organic farming was changing and finally training courses for people from the ministry of Agriculture were held and in 2019 even courses for organic agriculture were introduced in all agricultural colleges in Zambia.

Brother Paul used to say, with organic farming smallholder farmers can double to quadruple their yields. He was very enthusiastic about organic farming and people could see his eyes shining and his passion, when he was talking about it. He showed that farmers can improve their livelihoods through organic farming: improving nutrition, increasing income and being able to send the children to school.

Laudato si' - Caring for our common home.

Intuitively Paul felt what Pope Francis would years later write in his encyclical letter "Laudato si'". He said: "Social justice very much has to include justice of the environment, and within that, there has to be a concern for women's rights. It's all part of it." For him caring for the farmers and for the environment was one. And from there it can be understood why he so fully embraced organic agriculture as a way to help smallholder farmers. It constituted the mission of his life. He was ahead of the time but he also had the consolation to work in with *Laudato Si'* and the Society of Jesus's fourth universal apostolic preference, taking care of our common home. For him it was a source of consolation to work within the vision of the Catholic Church.

Equator Prize winner in 2014

All his efforts were recognised in May 2014. Kasisi was chosen as one of 25 outstanding sustainable development initiatives around the globe by the United Nations Development Program. The UNDP's Equator Initiative singled out Kasisi for its practical steps to preserve Zambia's rural environment by training more than 10,000 small-scale farmers in sustainable farming techniques.

Last Years

Brother Paul continued to be the Director of KATC up to 2020 when he took a back seat. He continued as Dean of the Diploma Program for Agroecology which started the same year. Paul had worked towards the creation of the Program since 2008. Now he took a minutious interest to improve every single course and to fuse in his ideas and great experience of 50 years. It was his legacy for Zambia and its farmers.

Paul was always strong and would never complain about being sick. In September 2022 within a few weeks his capacity to concentrate reduced strongly. He returned to Canada for a medical checkup and was operated within a few days on a brain tumour that was found. He continued in good spirits despite increasing diminishment. During this time he expressed his extreme gratitude towards God for his life and he said: "God is good, that's it!". Finally, he returned to his beloved Creator on 16 August 2023, at Rene Goupil House in Pickering, Ontario, Canada. Br Paul was 78 years old and in his 60th year in the Society of Jesus.

Brother Paul's Journey is an inspiring example of how one individual, armed with compassion, dedication, and a simple tool like a shovel, can sow the seeds of change and cultivate lasting transformation in the lives of others. His legacy continues to inspire others to embrace sustainable agriculture, empower rural communities, and nurture a future of promise and abundance for generations to come.

SENT TOGETHER ON A MISSION

Zio Mwale

In the heart of Kasisi Agricultural Training Centre lies a unique convergence of faith, tradition, and innovation. At the forefront of this harmonious blend stands a group of dedicated Catholic Jesuits whose unwavering commitment to service and social justice has catalysed profound change since the institution's formation in 1974.

Nestled amidst verdant fields and echoing with the hum of nature's rhythm, KATC has flourished under the guidance and stewardship of the Jesuits, a community that has served in Zambia for more than 100 years. Embracing the Jesuit ethos of "men and women for others," these visionary individuals have not only imparted the community with faith but have also sowed seeds of hope, compassion, and transformation in the hearts of all who pass through its gates.

With a legacy rooted in spirituality and a deep reverence for the Earth, the Catholic Jesuits have brought a holistic approach to agricultural education. Their profound understanding of the interconnectedness between humanity and the environment has seen a number walk through the gates of KATC with the goal and hope of bringing change through their expertise.

With their tireless dedication and unwavering belief in the power of education to effect positive change, they have empowered countless individuals to become agents of transformation at KATC and beyond.

In this article, we delve into the rich tapestry of these great servants of the Lord and their contributions to KATC. From humble beginnings to groundbreaking initiatives, their legacy serves as a beacon of inspiration, reminding us of the profound impact that faith, service, and a deep connection to the land can have on creating a more just and sustainable world.

Fr Donal McKenna, S.J.

(1933-2000. In Zambia/Malawi 1960-2000)

To walk into Fr Donal's room was like walking into a multi-purpose workshop. Apart from his bed, table, and wash sink, there were pieces of machinery, electrical components, bottles of a variety of liquids, exercise books, and other mysterious pieces of equipment. In a tribute to him, it was said, "He was a good engineer, mechanic, electrician, scientist, teacher, agriculturalist and above all a man of prayer".

Fr Donal was born in Dublin on 6th July 1933 into a family deeply connected with Irish history, for his father was the chief of staff of the Irish Army for many years. He was educated by the Christian brothers at O'Connell's School in Dublin, after which he went to University College, Dublin where he received a B.Eng. (Electrical).

He worked as an engineer in Switzerland for a year. He then entered the society in 1955. For reGENCY, he came to Zambia in 1960, learned Tonga, and then taught science at Canisius Secondary School. Returning to Ireland to study theology, he was ordained priest in Milltown Park in 1966.



Fr. Andrew Simpasa handing a souvenir to brother Paul at Kasisi Agricultural Training Centre

Fr Donal moved to Kasisi mission from 1982 to 1990 as superior. It is there he worked at Kasisi Agricultural Training Centre and introduced a new workshop with appropriate technologies, where he developed a pedal water pump and the ox-cart with rubber wheels and a timber axle.

“Before Fr Donal came, the institution did not have any workshop, he came to Kasisi and brought new technologies that helped handle the work at the farm. We had no activities on appropriate technologies,” Aaron Kabanda, KATC’s first employed worker said.

Fr Donal did not only build the workshop, he also assisted Brother Paul to run the institution in his absence and he also helped Frances to introduce black smith short courses for the community through his newly developed workshop.

Fr Roland Lesseps S.J

Fr Roland Lesseps was born in New Orleans, Louisiana to Alexander Lesseps and Mary Reyer, on 13th August 1933. His father refused his request to do his secondary schooling in St Benedict Minor Seminary and so he went to Jesuit High School.

Fr Roland’s apostolic history is quite simple: he began work at Loyola University in New Orleans in 1967 as an Assistant Professor of Biology and with two brief interludes, taught there until 1990, finishing as a full professor in 1981, with a stint as Chair of the Department of Biological Science. As a teacher-researcher, he was involved in cellular biology and published, often in collaboration with others, a total of 28 research papers on embryology. He received ten funding grants for his research during his time at Loyola University.

In 1973 -74 he was a Visiting Professor at the Katholieke University in Nijmegen, Netherlands, and in 1987-88 he was a teacher of biology and agriculture at the University of Zambia and Kasisi Agricultural Training Centre in Lusaka. He came by chance to Zambia. He had applied to go to Nairobi but things did not materialise there. Then he heard about the work being done at Kasisi Agricultural Training Centre and came here for his sabbatical.

His year in Zambia was an influential experience for him, for after another year at Loyola and some brief study, he returned to the Kasisi Agricultural Training Centre Lusaka in 1990 and worked there until 2009, when health problems forced him to retire home.

“When he came to KATC, he assisted Br. Paul, to plant trees around the centre, He planted almost all the trees you see here, and he also introduced agroforestry” Mr. Kabanda said.

In the *Southern Jesuit Notes* newsletter of May 1993, there is an article about Roland that gives a quick summary of his education, mentioning that he spent the fall of 1989 at the University of Arizona studying agriculture, and then departed for Zambia. The article describes some of the needs of the rural part of Zambia, and how Roland was “involved in several Agroforestry projects, i.e., using trees and shrubs in a farming system combined with food crops and/or animals.” He worked with others to introduce a fast-growing tree called “sesban” which was useful for firewood and could be harvested as firewood after 2 years.

He played an important role in the KATC team in its support of the government policy of opposing the importing of GMO food and GMO seeds. As early as 1994, Fr. Roland wrote that he and another Jesuit had written a postulatum for General Congregation 34 requesting that the society “make a priority in our mission today the promotion of the integrity of creation.” Who would have guessed that Fr Roland, a quiet man, was speaking such a prophetic word? At Kasisi he had ample opportunity to keep his interest in bird watching.

He was a quiet and unassuming person who got on well with everyone. He was superior of the Jesuit community at Kasisi for two terms and experienced little difficulty in working under one of the community members who was the director of the centre. Although coming from a sophisticated academic background, he had no difficulty fitting into a centre that focused on the basic needs of farming in Zambia. He adapted easily and applied his many academic talents to the local situation.

On the eve of his going on leave in 2009, he had a fall at Kasisi. He retired to Ignatius Residence in New Orleans and then to the St Alphonsus Rodriguez Pavillion in Grand Coteau. He was called to eternal life on Friday 27th March 2020. He was 86 years old, a Jesuit for 68 years, and a priest for 54 years.

Happy Patrick Mzumara, S.J

Brother Happy Patrick Mzumara, fondly known as HP, was born of Edward Mzumara and Elizabeth Chirwa, on 10th March 1960 at Mzambazi, Malawi. He was the second child of a family of ten. He had quite an unusual background for his maternal grandfather was the first catholic of the Mzuzu Diocese and was baptised while in Zimbabwe at Kutama in 1935.

He went to St John Bosco Secondary School in Katete (Mzimba District). When he entered the novitiate in 1983, he was the first Tumbuka Jesuit. At Kasisi he worked with Fr Lesseps. With his agricultural background, he developed his desire to work in the agricultural field. After vows, he completed his O levels in Canisius, Chikuni; he then worked at KATC. In 1989 he obtained a certificate from Zambia College of Agriculture at Monze. He spent 1990-1991 in Nairobi earning a diploma in theology.

Fr Terry Mutesha, SJ writes of his time later in Kasungu, "He was passionate about agriculture ... He would explain the medical aspects of many plants and quite several people would consult him on their illness and he would refer them to certain plants. We used to call him the "Witchdoctor" for he would sit under a mango tree in Kasungu community and talk to people about the various plants he had planted and their medicinal properties."

Later he came back to Kasisi for some years. He started working at KATC again from 2008 to 2009 and then as minister looking after the province farm (2012-2014) and finally the community garden (2014-2017). While at KATC he developed a small livestock enclosure that had chickens, ducks, turkeys, and rabbits. It was built in such a manner that villagers could copy the idea at their farms.

"At first he came to learn, as a novice, then he came two years, he was working in the extension with Mr Chilala and mostly he was into training farmers," Mr. Kabanda said

During his time at Kasisi, he experienced serious health problems and was eventually sent to South Africa where his cancer was successfully treated with chemotherapy.

He was a regular contributor at BBC and provided them with many African Proverbs and sayings. BBC even gave him a prize for his many submissions. He loved telling stories and making people laugh. He liked recounting the events of the first president of Malawi. Dr. Kamuzu Banda, would imitate his mannerist way of talking to the delight of his listeners. Fr Charlie Searson writes of a time in Ireland when he invited Happy to visit his brother's family "I still have a wonderful photograph of that visit which shows happy entertaining my nieces and nephews, bringing out the very best smiles in them as his name implied, he could make people discover their happiness".

'Working Together' Jesuits and Collaboration at KATC.

Fr. Admire Nhika SJ and Aaron Kabanda

The Society of Jesus understands collaboration as the coming together of a great diversity of people with a common vision and mission. We realise that diverse groups of people have more in common than differences, and we maximise the commonness to build up societies. As Christians, we are all missioned by our Lord Jesus Christ, "Go into the world and preach the Gospel to all creation" (Mk 16:15). Being missioned by Christ is not only the work of Jesuits, neither is it a work of individuals in isolation. We understand that as Jesuits who have a mission which centres on the salvation of souls, through various works, we can have other people with the same vision, same aspirations as ours. As Jesuits, we may have the platforms, while others have different resources, be it skills, or material resources. All these are channelled towards the same mission, and that is collaboration. Jesuits have managed to collaborate with fellow Catholics, non-Catholics, and even people of other faiths. We all have a common humanity and similar aspirations which we can share to build together. However, with the diversification I have mentioned, there cannot be a shortage of challenges.

How can we achieve good collaboration?

As Jesuits, we need to train ourselves to be able to bring together this diversity in a harmonious way that does not bring conflict but creates networks and synergies. We also train those who are interested, to understand and assimilate in greater depth, our way of proceeding and our worldview as inspired to us by Jesus Christ through the vision of St Ignatius of Loyola.

KATC is an institute that collaborates with many other organisations and different people who partner with it towards the same vision it carries. That of respecting ecological justice through promoting organic methods of agriculture. However, there are still many opportunities to be explored in creative and innovative ways across the Southern Africa Province and beyond. This is facilitated by knowledge sharing and education.

Mr. Kabanda shares his experience working and collaborating with Jesuits at Kasisi Agricultural Training Centre. He writes that obedience, patience, and self-control are intertwined, for someone to stay longer. Here, I am writing this history of KATC. I have seen Kasisi Agricultural Training Centre (KATC) Growing. This is the 49th year of my stay here.

- a. Years of employment from 1975 to 2008=33 years.
- b. Years on contract as from 2009 to 2011= 02 years
- c. Years of stay waiting to shift to Kumena settlements 2011-2025=14 years.

Sometimes I was ridiculed for having stayed long in one state and place, 'KATC'. People never knew what made me stay at KATC up to date. This was the encouragement and advice I received from other sources back in 1980.

- i. From Frances Naderer who was or volunteered from 1977 to 1979 at this period the director went on study leave. Frances was from Austria; he was acting as a director on his behalf. I visited his home for one week in 1980. Frances advised me to continue working with the church, meaning to work with the Jesuits in Zambia.



Brother Paul with farmers from the Charis project

From Austria, I visited Brother Paul's parents in Canada. While there the Canadian brother Paul's Superior visited me at his parent's house and his name was Father Nash. He arranged to meet me at the railing station in Toronto from Stoney Point County, from Toronto railway station by underground railway to the airport to board the plane to Halifax airport to Nova Scotia by bus. This trip was in June 1980 for studies at Coady International Institute (St. Francis Xavier University doing a diploma course in social development study for six months.

From all the advice, I found working under Brother Paul as director was conclusive for me. My observation of Bro Paul was conclusive, he was an honest, dedicated, God-fearing leader who had a vision for human development and sacrificed his life up to the end of his vision.

To me, Bro Paul as a director was my mentor in most of my day-to-day life. He was my age-mate, he was spiritual, he was like a family brother.

Helping Hands

Fr. Claus Recktenwald sj, Minami Watanabe, Kota Nakamura

This article is dedicated to all the volunteers, who came over the 50 years to KATC. They did not, like the title might suggest, lend only a hand, but also brought in their expertise in various fields, their enthusiasm and dedication – in short: their hearts and minds. They helped to shape the idea of KATC and at the same time to realise it. These volunteers came from many different countries such as Canada, England, Austria, Japan, Switzerland, and Germany... Some stayed for a few months, others for longer periods up to 4 years even. They helped in the fields, in administration, building learning materials, capacity building, or setting up entire new sections at KATC. In such an engagement both sides are learning and receiving. Not all volunteers who have contributed are mentioned by name in this article. Unfortunately, no records of volunteers over the years exist. But this article might serve to express the extreme gratitude of KATC to all of them.

Already in 1977, Brother Paul was supposed to return to Canada for a Master's program in Plant Protection. He had to leave the newborn project, which he had only started three years before. The first young couples had come in and it was a crucial moment for the project. In this situation, Bertha and Franz Naderer, a couple from the diocese of Vienna in Austria came for two years to KATC to replace Paul.

"Our first encounter was on April 1, 1977. We were supposed to land in Lusaka for lunch, coming from Europe, but there was a stop in Nairobi! No flight, they said, there's no aircraft flying to Lusaka now, maybe later in the evening. And so it was, we finally arrived in Lusaka around midnight, with 2 little children and having been on the road for a long time. Our concern was that there would be no one waiting for us! But there was a cheerful Brother Paul waiting! We had never seen each other before, no photo, but we felt it must be him, and he felt the same way; he saw us with the 2 little children and knew it was us he was waiting for. He had been to the airport several times and each time nothing, he told us! There was an immediate trust, we felt in our hearts it fit - and so it was! We spent the first time at the Kasisi Mission with the Brothers until the house in KATC was set up. He drove us to Lusaka for shopping, very purposefully and swiftly through the store and out again! We had 2 months where he showed us everything, organised a language course in Nyanja, and often said we have to be pertinacious, our dictionary said persistent, endure! Yes, that's what we wanted, and to continue his project well for the 2 years he went to Canada for further training! Only later did we realise what an important task he entrusted to us there, his idea, his whole heart was in this project!"

Paul had the opportunity to visit the Naderer family 35 years later in their home in Vienna to get to know more about organic farming in Austria. Finally, in 2019 Bertha and Franz together with their son Thomas and his wife Gerlinde visited Kasisi for the second time after more than 40 years. Paul recognized after such a long time, the contribution of his first volunteers as "an important piece of the puzzle back then!"

Two other couples came over the years to help in Kasisi. Sid and Brenda came from England in 1993. Sid was assisting in the workshop and set up the blacksmithing course, whilst Brenda assisted in the office in administration work. Glean and Mary Jane Mcleod came from Canada in the mid 1990s, they laid foundation work for the short courses in sustainable agriculture, which replaced the 2 year training for the young couples.

In 2000, Steve who was a banker and at the same time trained agronomist joined KATC as a volunteer. He helped in report writing and in publishing the first four study circle manuals.

From 2014-2019 Markus Schär a Swiss dairy processing professional send by Comundo helped to develop a dairy processing plant at KATC, to make different milk products like cheeses, yoghurt

Since 2022 JICA has been sending professional volunteers to help in capacity building and to achieve specific development goals of the institution. At the moment 2 Japanese volunteers are

working at KATC, Minami Watanabe a veterinarian, and Kota Nakamura a trained agricultural economist.

In September 2023, we received a Jesuit volunteer from Austria. Her name is Mirjam Vornach. She is working in the backup seed bank and the plastic recycling workshop, within the empowerment program.

Actual Volunteers and their mission at KATC

Minami Watanabe is a trained veterinarian with a background in dairy and dairy processing.

“My assignment is to improve the quality and quantity of dairy products at KATC from 2022 to 2024 as a volunteer of JICA, Japan International Cooperation Agency. I am working in the production unit, specifically the Dairy processing and Livestock department. To achieve the assignment, I have done two main things. One is the introduction of Vacuum sealer for packaging cheese. The machine improves the quality of dairy products hygienically and professionally. And the other one is the construction of a feeding trough for dairy animals. The roofed feeding trough will help to improve animal well-being thus milk production will increase. I am working closely with Ms. Kadonsi Naomi, the processing supervisor, Mr. Hamangaba Hamachila, the livestock supervisor, and Fr. Claus on these projects. They always help me with proper advice. JICA supported these two projects financially.

For me, KATC is the best place to learn organic farming comprehensively. I am gaining a lot of knowledge and many ideas on sustainable farming. And I am convinced that students and small-scale farmers who learn at KATC will improve their livelihoods. Eventually, the people who have passion will change Zambia.

Finally, I would like to express sincere thanks to all the KATC team. Not only have my experiences here had a positive impact on my career as a veterinarian, but living in a different culture has enriched my life. I wish KATC all the best in the future.”

Kota Nakamura has been working at KATC since August 2023 supporting horticultural production, especially in the area of on-farm seed production.

“Before coming to Zambia, I studied agricultural economics at a university and worked on my family’s farm for three years after graduation. However, during my time as a farmer, the environment surrounding agriculture underwent significant changes due to the COVID-19 pandemic and worsening international conditions. Japanese farmers were heavily impacted by rising prices because they relied on imports for items such as chemical fertilisers, agricultural machinery, fuel, and livestock feed.☒

This led to my interest in African agriculture. I felt that Zambia, with its abundant water resources and lack of domestic resources for items like chemical fertilisers and fuel, would provide a valuable learning experience. Additionally, I found the KATC appealing because it offers insights into large-scale organic farming, dairy farming, and small-scale vegetable cultivation.

I am currently engaged in seed production using a greenhouse, cultivating seeds for melons, tomatoes, pumpkins, okras, and other crops. Despite facing daily challenges, such as excessive heat inside the greenhouse, dry and compacted soil, intermittent water supply, and pests like grasshoppers and aphids, I find joy in embracing new challenges.

I’ve noticed that the variety of vegetables available for small-scale farmers to save seeds from is limited, especially when it comes to root crops and fruiting vegetables. I believe that even without significant financial resources, knowing on-farm seed-saving techniques can enable sustainable farming practices. Expanding the range of vegetables that can be saved for seeds could improve farmers’ health and increase their income. I hope that my efforts will contribute to the sustainability of small-scale farming in Zambia.”

CHAPTER II
**IMPROVING LIVELIHOODS THROUGH
TRAINING**

Different training approaches over time

Zio Mwale

Young couples training program

The very first project Brother Paul started was the couples training program. It is with this program that the history of the training centre starts officially. Already in the years before Brother Paul built up relations with the surrounding communities and identified the main problems to be addressed. Among them were: low annual income, low education level, high mortality rate, poor housing, alcoholism, lack of cooperation, lack of sporting facilities, low capital for farming, and the rampant cutting of trees for charcoal production.



Young couple program participants working in a vegetable field at Kasisi Agricultural Training Centre

With this research done, Brother Paul received some funding which opened doors to the couples training program in 1974.

The first three trainees were Langson Matambashi, Kazinito Zulu, and Richard Hakone.

When the three arrived with their wives and children, they were accommodated in new houses, which had been constructed using burned bricks.

Each family had to build their own poultry houses using local materials. The men cut down trees for the framework of the house while the women cut grass for the roofing.

The first three trainees' training lasted for three years, 1974-1977 and thereafter it was to last for two years only.

The trainees' recruitment was through the village headmen and church leaders. For the first six months, they were requested to bring with them 5x90kg maize for their substance until they started harvesting their vegetables and selling eggs and broiler chickens.

The couples were on six-month probation to become fully baked trainees, and a piece of the area was given for each family to uproot trees which can be accomplished within those six months.

Trainees were very instrumental in helping to run the centre, they helped in firefighting, unloading the truck with animal feed, building blocks, cement and they also sold vegetable rain-fed crops with the accompaniment of one staff member.

The program had their account books for record keeping, every Saturday morning they met with responsible staff to record their sales of the previous day.

From 1978 on, the Center got a Mercedes Benz Lorry. These Trucks were assembled in Zambia by this time. The truck is still today at the Training Center and running. It was often used to carry the produce of the farmers to markets.

Every family was supposed to earn enough money to buy an oxcart and a pair of oxen during the first year. Beyond this, each trainee family had their vision after completing their training back home. Some went for rain-fed crop production, as their investments went into a plough and other equipment, while others were buying cattle. Others went for irrigated crops and those will invest in irrigation equipment.

Whilst the training of the families was very successful, the return to their villages often turned out to be difficult. The other villagers also wanted to profit from the implements they brought with them, considering them as a donation from KATC for the community. For this reason and as a motivation for the families, the best families were promised 10 ha of land in Kumena, where they would be able to settle and farm together as a new community. In total 13 families settled in Kumena and remain there up to today.

The recruitment of trainees was restricted to younger married couples within the Chongwe district. The program ran from 1974 to 2000 training 82 families with 26 failing to complete. The training was restricted to 10 families, 5 in the first year and 5 in the second year.

Training of school leavers

In 1997, KATC introduced another training program for the school leavers, the training was targeted at girls and boys from around the Kasisi community who had completed their high school.



Happy participants of the vegetable project at Kasisi Agricultural Training Centre

The main aim of the program was to train school leavers on how to grow organic vegetables, the project was led by Fr Roland, Justina Shula, and Austin Chilala. The school leavers would grow vegetables and sell them after harvesting.

Though the project recruited several young people it did not give any certificates, it came with a lot of challenges such as theft at the marketing place, and some young people were not committed because they came far from KATC, which caused the project to slowly come to an end in 1999.

Nevertheless, the question remains highly relevant, how to open a perspective for youth to succeed professionally.

Growing Vegetables under irrigation

There were 3 projects providing farmers access to land under KATC irrigation to grow vegetables all year round. The CIDA Project (2011 – 2014) was financed by the Canadian International Development Agency. The primary goal was to form cooperatives. Farmers were given a loan in the beginning that they had to pay back. At the end of the project period, two cooperatives were founded: Tufwambe and Tione. Whilst Tufwambe is still active today running a poultry and a hammermill, the participants of Tuonde decided to buy land from their money, which was distributed to the members. The area has become today more of a township.

CSEF (Canadian Social Entrepreneurship Foundation) financed a second project from 2015 to 2017. There were 100 farmers that were supposed to acquire knowledge and capital to continue growing vegetables afterwards on their own land. However, due to the lack of irrigation possibility, this was difficult for many of them.

The Charis Project runs from 2020 up to today. Again 100 farmers started to grow vegetables in 4 subgroups. Vegetables were either delivered to town or sold directly from the field. All money is put into an account and payout is done at the end of the month. Each farmer has to contribute to cover the costs for irrigation, coordination, transport, and inputs. After moving the project in 2022 to Borehole 1 the number of farmers reduced but the project continues up to today.

Training Department

Emmanuel Mulenga

From its beginning in 1974 KATC was running 2 year training programmes for young couples. Over a period of twenty years this model showed very successfully how this intensive training programme equipped the families with the knowledge, confidence and also with the necessary financial means and implements to start productive life as farmers.

However in the first half of the 1990s different dynamics led KATC to reconsider and to adjust its training program to respond to a changed reality.

On the one hand there was a growing demand of donors to increase the number of beneficiaries. The numbers of families trained at KATC were limited to 10 families each year. Donors were more and more concerned to impart the knowledge on more farmers to justify their support. This was an external pressure that was felt, nevertheless there were also more deep internal reasons that suggested reorienting the centre.

There was a rupture between the life of the young couples and their communities. For many going afterwards back into their communities was not easy. In some communities the other farmers claimed that the implements purchased by the couples belonged to the community as a donation from KATC. The solution to settle the young couples in another place like Kumena together was just a superficial solution, but it did not help to achieve the goal to improve the livelihood of communities as a whole.

Finally there was the transition of the centre towards Organic Agriculture. There was the opportunity to share this knowledge with a larger number of farmers, as it opened a new and unique field of teaching in Zambia.

Behind the development of the short courses and the training manuals stood the idea to open the training to a broader range of people like farmers, extension staff, teachers and community based extension staff. Was it in the beginning difficult to motivate staff of the ministry of agriculture for the courses as they were seen as backward, with time more and more interest from the ministry came up. Today KATC is training intensively 40 government extension officers from eastern provinces as multipliers for sustainable organic agriculture.

Since the start of the short training courses over 20 different modules have been developed. Their duration made it possible to participate in a training and to go directly back and put into practice what was learned on the farm or in their own work. Now nearly 30 years later these short training courses are offered with slight and steady modifications.

Beside the foundation course in sustainable organic agriculture, the modules developed, span topics such as Organic Vegetable Production (OVP), Natural Pest and Disease Management, Agroforestry, Small Animal Production and On-farm Fertiliser Production just to mention a few. In all of these courses cross-cutting issues are integrated like HIV/AIDS, Genetically Modified Organisms (GMOs), Gender Issues, Climate Change, Farmer Seed Rights.

These trainings are very flexible, they can be taught both, as a residential and on site. So was the first short training offered outside of KATC at Chalimbana farm institute. The standard duration for the training is five (5) days. However, depending on the circumstances, the courses are tailored to meet the demands and budgets of the customers. This involves reducing the number of days, crushing two courses into one and delivering the course onsite.

The training is conducted in a manner with emphasis on the understanding of content and hands-on practice. There are theory sessions held in class and practical sessions held outside depending on the topic being covered.

The search for making the training as much practical as possible led to the integration of teachers from the Production Unit, the creation of demonstration sites like an irrigated garden, rainfed demo-plots, permaculture plots, a biofertiliser workshop and an agroforestry nursery.

Over the years KATC has trained thousands of farmers, extension staff and budding professionals who have been self-supported, NGO supported and project funded. These have come from the Ministry of Agriculture (MoA), NGOs and other partners within and from the Southern African region.

KATC Diploma and Empowerment Programs

Elphas Ndlovu, SJ

The 12th of April 2024 marks a great milestone for the institution, 50 years after the foundation of KATC. The KATC Diploma in Agroecology program will be holding its inaugural graduation ceremony. It is fascinating and amazing how ideas developed and events processed organically one after another from 1974 when the idea of Kasisi Agricultural Training Centre was birthed till today. All the learning and experience from the other training programs for young couples, school leavers and appropriate technology training as well as 5-day training programs contributed to the build-up of the Diploma.

After the transition to organic agriculture, KATC offered unique training in Zambia on a practical level. It became soon clear that a broader transition of Zambia towards organic agriculture would also need well trained professionals, hence the need of tertiary academic education in this field. Only work on all levels of the agricultural sector leading to organic agriculture, would ensure that goals like more resilient farmer households, higher incomes, better nutrition and climate change adaptation and mitigation could be achieved.

In this context the idea to establish a University that would offer degrees in sustainable organic agriculture was born. Reflections in this direction started as early as 1997. In 2008, Professor Obed Lungu, a notable scholar from the University of Zambia and consultant to KATC advised that it would be practical to first establish a college that offers a diploma program in sustainable agriculture and then eventually a university that offers the same.

From this time on KATC started to work towards the establishment of a diploma formation program. This goes on to confirm the adage 'Rome was not built in a day' and the African proverb 'however long the night, the dawn will break'. Indeed, after twenty-plus years the training centre welcomed forty students into its first year of the Diploma program.

In 2018 finally Bred for the World showed interest to finance the development of such a program. After a concept development phase, the development of the program started in 2020. Mr. Charles Mwamba, was employed as program coordinator.



Empowerment program student working on a plastic recycling project at the National Scientific Research Institute

It was a question of what would be the title of the Diploma to be offered. As KATC has been promoting for many years now “sustainable organic agriculture” this title was used. However, “Agroecology” had a wider perspective as it also considered social aspects, whereas organic agriculture focuses more on the technical farming aspects.

Another crucial question to be solved was how the program could be registered. Two options were mainly discussed: Registering under TEVETA or accreditation by the University of Zambia. UNZA showed a very practical approach and both institutions enjoyed a longstanding relationship in research and training of students.

Initially the program was thought to be a full-time residential one but with the outbreak of the Corona Pandemic in 2020 the design of the program was oriented towards a blended learning model, which combines online learning with times of residentials. This made the program also more flexible, especially to those who would be juggling between work and academics. Brother Paul emphasised strongly on the importance of the residentials that the diploma keeps its practical edge. For him this was the cornerstone of the whole program.

The program has two entry levels, the first one catering for those with prior studies in agriculture and the second for those who are coming straight from secondary school. The difference between these two entry levels is that those with prior studies are exempted from the first year and enrol in the two-year program while the latter enrol as first years and their duration of study is three years. The program started in 2022 with the second year and from January 2024 also first year students are now being admitted into the program.

The diploma program was tailored in such a way that it caters for crop production, livestock production, land use management, agroforestry, and management - to mention but a few thematic areas in a holistic manner that all speak to environment sustainability as the epitome of agriculture.



Empowerment program student at the National Scientific Research Institute

Also social issues inherent to the current food system are addressed. The inequality between the rural population and the urbanites is glaring and alarming. Farmers have to learn to produce sufficient nutritious food to feed a growing population while increasing their earnings and caring for Mother Earth. But they also need just remuneration for their labour and the entrepreneurial risk they are taking. The whole food system needs strong adjustments to be truly just.

The courses are specifically tailored and developed to achieve this end, which is food and feed production that is conscious of the environment, culturally sensitive and aware of social issues like growing income gap between rural and urban population.

This program aims to produce and implement a unique curriculum that emphasises practical hands-on training to produce well-equipped graduates as future farmers, farm managers, extension agents, and policymakers in organic agriculture.

In 2023 in addition to the Diploma Program the Youth Empowerment Program was established to help young students gain practical experience and to transform the knowledge acquired from the diploma program into business ventures that would generate income.

As the word 'empower' in the title indicates, the scheme offers conducive conditions for students to bring their ingenuity and knowledge gained to change their lives and put into practice knowledge gained in a manner that transforms communities. Like the young couples training program in the 1990s, empowerment students reside within the training centre.

These students work and improve their skills in the plastic shed (where plastic recycling takes place), seed bank (production of organic seed), and Charis Garden among others. The scheme offers students an opportunity to earn as they learn, because the proceeds from their ventures are retained by them for their upkeep and needs receiving besides the essentials that Kasisi Training Centre provides.

Another aspect of the Empowerment scheme is the exchange program that some students are awarded after they complete their diploma studies. They are granted an opportunity to travel to Germany and stay for three months to explore more in the world of sustainable agriculture. During this period the students are attached to organic farms to learn and develop a different worldview to integrate the best of both worlds to come up with implementations that better serve the context of Zambia.

Research at Kasisi Agricultural training centre

Josephine Kachapulula

Since the establishment of Kasisi agricultural training centre (KATC) in 1974, the small scale farmer has always played a central role in the vision and mission of KATC to promote sustainable farming practices through extension and training using demonstration plots. In 2009, Fr. Dondo Bena Benoit, SJ introduced the research section at KATC. The institution was one of the sites for conducting his MSc. Research along with 2 other sites at GART and UNZA. The objective of this pilot research project was to control the maize stem borer using the push and pull method where three different maize varieties were the experimental units, three sweet sorghum varieties were the pull while three different legumes (groundnuts, soya beans and common beans) were the push.

For about fifteen years now, KATC has continued carrying out research in partnership with different institutions like Zambia agricultural research institute (ZARI), the University of Zambia (UNZA), FIBL (IFOAM) and other CGIAR centres like ICIPE. The main objective of the research carried out by KATC is to verify sustainable organic agriculture (SOA) practices that are reproducible by small scale farmers using readily available materials in their natural environment, minimise waste and create synergies at the farm level. The aim of the technologies is to ensure that the small scale farmers can have increased food production at a safe and reasonable cost. Therefore, alternative low-cost practices that could enhance soil fertility and improve yield levels of maize among smallholder farmers in Zambia are much needed.

Among the research carried out by KATC involves promotion and justification of sustainable organic agriculture practices such as: Permaculture, Crop rotation, intercropping, organic solid and liquid bio-fertilizers, pesticides and herbicides, dead and green manuring, conservation tillage, mulching and agroforestry. Since 2003 different practices are tried in the KATC demo-plots and yields are recorded, giving over the years an interesting picture of promising interactions. Also, a number of different plants are promoted like agroforestry trees, green manure plants, oils and legume plants and both big and small grain cereals.

One of the research projects in which KATC was involved is the promotion of *Faidherbia albida* (Musangu) tree to improve soil fertility and crop yields on smallholder farmers' fields (Yengwe et al. 2018). Musangu was picked due to its unique characteristic of shedding leaves during the wet season and having them in the dry season (canopy). From the research carried out over a period of two farming seasons 2014/2015 and 2015/2026, the Musangu tree was the only source of fertiliser for soil fertility management of maize fields. The results from this research indicated an average of 1.8t/ha difference in yield between the two treatments (Musangu tree canopy and no Musangu tree canopy) with normal rainfall distribution (975mm) while a yield difference of 1.4t/ha was recorded in the season with below normal rainfall distribution (642mm). Fertiliser trees in agroforestry have shown the potential to conserve soil organic carbon (SOC) and replenish soil fertility through root and litter decomposition.

Among the benefits of having Musangu tree canopy in a farming system are: Increase in crop yield under the canopies, improvement of soil quality underneath the canopies, and addition of biomass through litter fall. *Faidherbia albida* trees also provide wood for construction and firewood to the rural households, shade to animals during the hot dry season and the pods from the trees are a good source of livestock feed.



Source: Jones Yengwe, Okky Amalia, Obed Isaac Lungu, Stefaan De Neve: Quantifying nutrient deposition and yield levels of maize (*Zea mays*) under *Faidherbia albida* agroforestry system in Zambia. *European Journal of Agronomy*, Volume 99, 2018.

CHAPTER III
GOING ORGANIC

The 2001-2002 ANTI-GMO-DEBATE

Bridget o'Connor, Fr. Claus Recktenwald SJ

There has been a debate about genetically modified crops over the last three decades. Over the years the argumentation has become more subtle. Seed companies have made strong progress in their attempt to frame the debate to overcome public resistance against GMOs. Today the argument is that climate change can only be tackled with GMOs because traditional breeding is too slow and not precise enough to produce drought, heat- and flood-tolerant crops that can withstand the extreme weather conditions most likely to come. This argument sounds plausible on the first glimpse but it is not. Current technology modifies single or small numbers of genes. The tolerances looked for, depend on the interplay of thousands of genes, which cannot be predicted today even by supercomputers. Secondly, selection by nature and observation in the field on large scales has a higher chance of producing a crop better adapted to the changes to come. The natural processes of plant adaptation through evolution are simply more powerful than the efforts led by our superficial understanding of how genetics, and gene-expression in plant parts, whole plants, or plant populations happen.

However, this narrative covers the economic interest of the seed companies to introduce GMOs in line with patent law. This combination gives them a powerful tool for seed market domination. It provides them with more complete rights than the old breeder's rights, which were established to ensure that breeders should earn a fair benefit for their work. With GMOs, each farmer who is found with plants in his field that contain the modified gene and where the seed was not directly bought from the seed company is potentially endangered of being brought to court for infringement of the rights of the company. The seed companies managed somehow to tweak the logic, instead of being sewed for contaminating local and traditional varieties, endangering the needed natural diversity, they can bring the farmer to court for violating the intellectual property right.

The 2001-2002 Anti-GMO debate in Zambia is another good example on how in the GMO debate a narrative is formed that puts pressure on states and the public to accept GMOs.

Zambia was suffering a drought in the 2001-2002 rainy season. The World Food Programme was sending food aid to assist Zambia to prevent starvation of its population. These deliveries of relief food are not free but come normally under certain conditions or agreements)

It was discovered that this food aid consisted of genetically modified maize produced in the US. And the government of the late President Levy Mwanawasa seemed to be not aware of this fact.

A public debate in Zambia arose, whether this GMO should be accepted or not. Many NGOs and individual persons were involved. JCTR and KATC under the guidance of Fr. Peter Henriot sj and Br. Paul Desmarais took a leading role in the debate and worked closely together with Mundia Seketani, the then Minister of Agriculture. There were long discussions between them on the way forward, sometimes even up to awkward hours in the night. There was quite some pressure put on the government by Richard Reagan from the World Food Programme in Zambia as more ships with 42.000 metric tons of food aid were on the way to Zambia. They were told that this food aid would be diverted to other countries. This statement was even topped by the revelation, that the World Food Programme had delivered already since seven years GM maize as food aid to Zambia. The Zambians felt rather like guinea pigs for this new technology, whereas it was presented as a noble cause because it helped in famine. It is a clear case where food sovereignty was played against food security.

Zambia's scientists were also concerned about such an unsolicited delivery of a new and globally controversial technology and Dr M. Lewanika, then head of NISIR, took a team of Zambian officials and scientists to the USA to learn about GMO food. The report back noted that the USA itself was very divided about accepting GMO food and their staple food was not maize. The team did not think it appropriate for Zambians to be used as guinea pigs. Following their advice the GM food was refused.

It is said that some people were so upset by this decision, that they even contacted the Pope to say he should stop his Jesuits starving the people of Zambia. A strict Biosafety law was put in place by 2007 which included the Precautionary Principle and that any negative effects of GMOs would have to be paid for by the owners of the technology. The Government policy writing team included Father Roland Lesseps, Head of KATC Forestry Dept.

Mundia Seketana, related at an Organic Conference organised by OPPAZ in 2005 that when told that Zambians would be starving in April 2002 he knew that they were not telling the truth because April is the one month in the year when no Zambians ever starve. He also said if people from the organic sector are stopped from seeing him they should kick down his door. Needless to say, there was no starvation and Zambia would have anyway been able to access non-GMO maize if needed from its neighbouring African region.

The GMO debate is, however, not over. At the moment there is some debate about GM maize imported by Eagle Milling (Zambia National Service) from South Africa. Their mealie meal is the cheapest on the Zambian market and it is consumed by millions of Zambians. The official statement is that this GM Maize goes directly to Congo and does not enter the zambian market. Zambia has concluded a several-year prepaid contract to deliver annually a certain amount of maize to the Democratic Republic of Congo. It is said that the South African GM maize is cheaper than the local Zambian one. It is not clear if this maize consignment comes already bagged in bags stating "for export only", or if they are repackaged (and where) in Zambia. In this case, it would be possible that this maize is also entering the Zambian market.

Trees on farm landscapes

Dr. Donald Zulu, PhD

Introduction

Since the organic turn of KATC in the early 1990s and through the pioneering work of Fr. Roland Lesseps integrating trees and shrubs on farm landscapes became an important part of KATC's programme. This integration of trees and shrubs with crop production and animal husbandry is called agroforestry. Agroforestry was developed as a response to global challenges including food insecurity, low crop productivity, declining soil fertility, land degradation, energy crisis, deforestation and climate change (extreme weather events especially drought and prolonged dry spells) among others. Going through the Center the trained eye can spot a multitude of trees that were planted purposely for many different reasons. Fr. Roland was seen by many as a fool because trees would just grow by themselves, today his work has become very much recognised. Trees and shrubs on farm landscapes enhance and maintain agricultural productivity in different ways. Some of the benefits of trees and shrubs on farms include:

- Trees for replenishing soil fertility (fertiliser trees)
- Trees for animal feed (fodder trees)
- Trees for providing pesticides (botanical pesticides)
- Trees for providing fruits (fruit trees)
- Trees for providing firewood and building materials (woodlots)

Fertiliser trees

Fertiliser tree system is the flagship agroforestry technology in Southern Africa including Zambia. Agroforestry practices for soil fertility management are designed to respond to declining soil fertility hence have potential to contribute to increased crop productivity and food security. All fertiliser tree practices



Farmers observing agroforestry demonstration plots

share three key characteristics involving fixing biological nitrogen into the soil, producing biomass that add organic matter to the soil and recycling of crop nutrients which were leached. Trees contribute to soil fertility by adding organic matter to the soil through the deposition of leaves, branches, and other plant debris. As these organic materials decompose, they release nutrients such as nitrogen, phosphorus, and potassium, enriching the soil and improving its nutrient content. Trees play a key role in nutrient cycling within ecosystems. Their root systems absorb nutrients from the soil, which are then transported to the above-ground parts of the tree. When leaves, fruits, or branches fall to the ground and decompose, these nutrients are returned to the soil, where they become available for uptake by other plants.

Trees further improve soil health by improving soil structure, preventing soil erosion, enhancing water retention and microbial activity vital for soil processes. Tree roots penetrate deep into the soil, helping to break up compacted soil and improve its structure. This enhances soil aeration, water infiltration, and root penetration, creating a more favourable environment for soil microorganisms and plant growth. The root systems of trees help to anchor soil in place, reducing erosion caused by water and wind. By stabilising soil particles, trees help to maintain soil structure and prevent nutrient loss through runoff. Trees play a crucial role in regulating the water cycle and maintaining soil moisture levels. Their root systems absorb water from the soil, reducing the risk of waterlogging during periods of excessive rainfall and preventing soil moisture loss through evaporation during dry periods. Trees contribute to the proliferation of beneficial soil micro and macro organisms, including bacteria, fungi, earthworms, ground beetles, termites, and millipedes which play important roles in nutrient cycling, organic matter decomposition, and soil fertility. The organic matter provided by trees serves as a substrate for soil fauna growth, enhancing soil biological activity.

Fertiliser trees can be planted as either intercrops, in rotations with crops (e.g., improved fallows) and in relay cropping. Trees and shrubs used to improve soil fertility in Zambia include *Faidherbia albida*, *Gliricidia sepium*, *Cajanus cajan*, *Tephrosia* species, and *Sesbania* species.

Fodder trees

Fodder trees are typically protein-rich leguminous species which could be planted closely on a separate piece of land or as hedges. Common fodder species in Zambia include *Leucaena* species, *Gliricidia sepium*, *Morus* species and *Moringa oleifera*. Leaves of these protein-rich species are harvested during the rainy season, dried in the shade and stored in sacks to supplement ruminant animals during the long dry season when grass is dry and of low protein. This practice reduces the dependence on the costly commercial animal feedstock.

Botanical pesticides

Botanical pesticides are becoming increasingly popular in sustainable agriculture due to their environmentally friendly nature and minimal impact on non-target organisms. These pesticides are derived from natural plant sources. Botanical pesticides are often biodegradable and pose fewer risks to ecosystems compared to synthetic pesticides. They break down more rapidly, reducing their persistence in the environment. Botanical pesticides are generally safer for farmworkers, consumers, and nearby communities since they have lower toxicity levels compared to synthetic alternatives. Examples of commonly used botanical pesticides include:

- **Neem oil and leaf extracts:** These are derived from the neem tree (*Azadirachta indica*). They contain compounds that disrupt insect growth and development, making it effective against a wide range of pests such as aphids, whiteflies, and caterpillars.
- **Pyrethrum:** These can be extracted from the dried flowers of certain species of chrysanthemum. Pyrethrum contains pyrethrins, which act as neurotoxins in insects. It is effective against many insect pests.
- **Extracts from snake bean pods:** Water extract made from pounded dry pods of *Bobgunnia madagascariensis* contain compounds that are very active against most pests of vegetables such as aphids and caterpillars.

While botanical pesticides offer many benefits, it's important to note that they may still have some limitations, such as variable efficacy depending on environmental conditions, and shorter residual activity. Additionally, proper application techniques and integrated pest management strategies are essential for maximising their effectiveness while minimising environmental impact.

Fruit trees

Both indigenous and exotic fruits help to meet food, nutrition and income security of smallholders. Growing fruit trees alongside other crops can provide farmers with diversified income streams. Fruit trees often have high market value and can generate revenue through the sale of fresh fruits, processed products (e.g., jams, juices), and by-products (e.g., leaves for fodder, wood for fuel or timber). Fruit trees can enhance ecological processes within agroforestry systems, such as biological pest control and pollination. They attract beneficial insects and birds that help control pest populations, reducing the need for synthetic pesticides. Additionally, they provide nectar and pollen resources for pollinators, contributing to improved fruit set and yield in adjacent crops.

To have productive orchards, it's important to plant grafted fruit trees using scions from superior disease-free mother plants.

Examples of common fruit trees in Zambia include:

- **Citrus trees:** such as oranges, lemons, and grapefruits.
- **Tropical fruit trees:** such as mango, avocado, papaya, and banana,
- **Indigenous fruit trees:** such as masuku, mpundu, mabuyu, mfungo among others.

Woodlots

A woodlot, also known as a wood plantation or forest plantation, refers to an area of land specifically planted with trees for the primary purpose of timber production, fuelwood, or other wood products. In agroforestry, a woodlot can be integrated into the agricultural landscape alongside other crops or livestock.

Woodlots reduce wood harvesting pressure from indigenous forests. Examples of tree species suitable for woodlots in agroforestry systems vary depending on the region and specific objectives but may include fast-growing species such as *Senna siamea*, *Leucaena leucocephala*, *Acacia crassiparpa*, *Acacia auriculiformis*, pines, and eucalyptus.

Conclusion

Trees on farms contribute to microclimate Modification. They can modify the microclimate of farming systems by providing shade, windbreaks, and shelter for other crops and animals. This microclimate moderation can help mitigate temperature extremes, reduce water stress in crops, and create more favourable growing conditions.

Trees are therefore an important element of sustainable agriculture. They are essential for maintaining soil fertility, improving productivity and resilience of farming systems to extreme weather events attributed to climate change, provide animal feed especially during the long dry season, provide fruits for humans, botanical pesticides, and wood for various household use.

History of Agroforestry at KATC

Brother Paul with the help of Fr Roland Lesseps introduced agroforestry, the activity started in 1986 with the planting of some *leucaena* trees and expanded in 1988 with the planting of four types of leguminous trees and shrubs. It also includes live fencing and experimenting with other trees for their uses.

It got more attention with the arrival of Bridget o'Connor in 1990, a staff member who specifically focused on ecologically sustainable agriculture, agroforestry, and organic farming.

Many varieties of trees were planted for human consumption, soil improvement, live fencing, firewood, windbreaks, and livestock feed. Brother Paul also used the opportunity for Beekeeping. In 1997, he started keeping bees and the Department of Forestry seconded a forester to KATC who helped out with forestry activities.

Organic Cotton – not only possible but a true alternative to GMO:

Stefan Seeherr interviewed Mr. Choongo

When did organic cotton production start?

I think it was in the early 2000s. But before that, we had a one-week training in organic cotton production.

Who did the training back then?

The expert came from Zimbabwe, his name was Shepard Musiandeka. We were given intensive training in cotton production for one week. Then, after the training, I was asked to establish a cotton field at the KATC. We started with a little more than a hectare. We grew that cotton the first year and we were successful and when we harvested, we were able to harvest 1.6 metric tonnes per hectare, whereas farmers around here only harvested around 400-800 kg. A lot of people started to come to our field and raised concerns because they thought our practices would introduce pests to the region. But we had some interplants that were recommended to be planted in the cotton fields. We would plant two rows of interplants and then 15 rows of cotton plants for pest control.

We had to identify the crops that worked as interplants because some were needed to trap the pests and some to repel the pests. That is what is called Push and Pull. One of the major interplants we planted were cowpeas. They are a great trap crop for aphids, which was one of the major pests for cotton. When we planted the cowpeas, we saw aphids settle on them rather than on the cotton. Ladybird beetles laid their eggs there. When their larvae hatched, each of them would consume up to 500 aphids a day.

We also looked into okra, because it is sweeter than cotton but from the same family. The pests, especially stalk borers would prefer the okra and spared the cotton.

Do you remember the donors of the project?

Most of the funding at that time was coming from SCIAF and we also got some funding from the Swedish cooperative centre. From this money we were able to produce some of the manuals on organic cotton production that we have at the centre here.

Why did the cotton production end?

The Chongwe district is not a cotton growing zone. People forced themselves to grow cotton but the yields were very low. Maybe in the southern part of Chongwe, which is Mwimba, the soils are different from here and cotton can be grown there. We showed that cotton can actually be grown here as well – our plants were up to two metres high.

And still no one would say “let’s grow cotton here on a greater scale“?

When we produced cotton at the Centre here, we engaged former trainees to grow cotton around here. The first time, we could put the cotton of the Centre and of the farmers together. But the amount of organic cotton was too small that the ginneries would agree to gin our cotton at the expense of their business.

What would have been the amount of cotton to go forward with production?

I don’t remember the exact amount, but at the time, we managed to gin our cotton together with the WWF and we could export the cotton to Tanzania. Dunavant, the major cotton producer, had contracts with the major cotton provinces, Eastern and Southern Zambia, and the company partnered with us to train the farmers in cotton production. We designed how the fields would be

managed. But at a moment the prices of cotton broke down massively, farmers in the Eastern Province would set their fields on fire because of that, because it made no sense for them to harvest. That brought down the morale of the farmers which was the falling down of the organic cotton production and cotton production in Zambia in general.

What was the reason for this downfall?

There are two main reasons. The main reason was the advent of the „salaula“ (second hand) clothes. Which put the whole cotton industry in Africa under extreme price pressure. Secondly in Zambia there was in the 1990s a turn towards liberalisation of the economy. Many parastatal companies, and the cotton industry was one of those, started to shake and went down after privatisation. Even mines would collapse at that time.

Would you see a future for organic cotton in Zambia?

There can be a future for organic cotton. KATC has proven that it works. At the moment Alliance Ginneries works in Chongwe with Farmers in Organic Cotton production. It would be great if the government could emphasise and support that Chongwe becomes completely organic in terms of cotton production. That could prevent potential conflicts and could work as a brand on the international cotton market.

KATC'S PARTICIPATION IN THE ORGANIC MOVEMENT

Bridget O'Connor

Brother Paul often described at public events how he realised by the 1990s that the conventional agriculture he brought to Zambia in 1974, after his Agriculture degree at Guelph University in Canada to help Zambian small scale farmers improve their productivity and livelihoods was not working. He saw that land was degrading and farmers were becoming indebted by the cost of inputs. As Pope Francis in 2015 espoused in his *Laudato Si'*: We should care for our common home, whereas there is a type of industrial/conventional agriculture that is killing God's creatures in nature, including plants (with herbicide), insects (with pesticides) and even ourselves (with chemical contaminated food and water). There are many studies about the global rise in non-communicable diseases (NCDs) like cancer, diabetes, and high BP. Zambians remember that there was not so much illness in the time of their grandparents. Pope Francis recognises that this crisis cannot be overcome in an individualistic attempt. It needs the collaboration of the whole human family, of different nations, cultures, religions, institutions and organisations. Brother Paul always was on the lookout for persons and organisations to work together on the common goal. He knew that a change in Zambia was only possible when it would become a broader movement of farmers and organisations working together to see the vital change happen.

OPPAZ

In 1999 Brother Paul was one of the founding members of the Organic Production & Processing Association of Zambia (OPPAZ) and served some years as Board chairperson. OPPAZ offered services in organic training, marketing and certification. The first CEO of OPPAZ was Susie Burgess whose organic enthusiasm and skills drew in many members including Forest Fruits and their 6000 beekeepers in Mwinilunga District of North Western Province, 17 wives of large-scale conventional farmers in Choma and Mazabuka whose husbands have 1 hectare to their wives to farm organically and about 30+ medium scale Zambian organic farmers in areas around Lusaka. When it was realised how difficult and costly it was to reach overseas organic markets, OPPAZ started a service of Local Organic Certification for Local Market mainly for the medium scale farmers.

Organic Certification, KOPA and CHOPPA

When OPPAZ Certification Manager/Ecocert Inspector left (Insert name) OPPAZ in 2008, Brother Paul invited her to join KATC staff to help KATC prepare for its annual ECOCERT certification inspection and also to be one of the KATC trainers. By this time another organic inspector had been trained by Ecocert in Zambia, Brian Siame (who now works for MOA). He conducted KATC's annual inspection for Ecocert without conflict of interest. Ecocert stopped employing locally based inspectors in 2016 and brought in inspectors by air from South Africa which put up the cost of 3rd party organic certification.

When KATC began training organic farmers, they also began to farm organically on demo plots and on a larger scale under centre pivots to show disbelievers that it was possible. They also planned to bulk up what small scale farmers could potentially produce for an organic market. The organic market was thought to be largely overseas and to reach this market required organic certification of farmer groups which needed to be managed by an Internal Control System (ICS). ICS became another of the short courses offered by KATC and aspiring organic producers, such as COMACO, sent their staff to take this ICS training at KATC.

KOPA

The KATC Outreach department helped farmers form KOPA (Kasisi Organic Producers Association)

and KATC farm and the KOPA farmers began to be organically certified by ECOCERT from the early 2000's. By 2008, KOPA was weaned from KATC and was renamed CHOPPA (Chongwe Organic Producers & Processors Association). CHOPPA was registered with the Dept of Social Welfare, raised operational funds and employed a small Management team. They used an office and a processing/packshed facility at KATC. By 2010 CHOPPA decided there was no viable overseas organic market for them and the cost of certification was too high. They began to help farmers find local markets for their produce which would be bulked up in the CHOPPA shed at KATC and sold to Lusaka markets. The first Chairperson of CHOPPA was the late Mr. Moses Mulenga one of the champion organic farmers who trained at KATC and from whom many farmers and visitors gained inspiration. CHOPPA stopped operating in 2018 but has not been officially disbanded. The last Chair remains Mr. Penius Tembo who also runs Chongwe Radio.

ZAAB

In 2010 KATC was invited to a meeting facilitated by COMESA and Mulungushi University at which GMO cotton was being promoted for small scale farmers using the example of Burkina Faso where, after research, it was about to reach the field trial stage. Later it was learned that the famous long staple indigenous BF cotton had lost its long staple when bred with the Monsanto GM cotton, causing BF to lose their international markets. Monsanto blamed the Burkina Faso scientists for insufficient back breeding and farmers were not given compensation. KATC informed their like-minded associates of the new GM push and some advocacy began. This like-minded grouping later became the founder members of ZAAB, initially calling it ZAABC (Zambia Alliance for Agroecology and Biodiversity Conservation). The founders included PELUM, Green Living Movement, ZCCN, and KATC and were soon joined by CTDI and ESSAF. Now Zaab counts 27 organisations and 3 individuals as their members.

Their advocacy and the network of like-minded organisations has spread greatly in Zambia and also in the region through the Alliance for Food Sovereignty in Africa (AFSA) which represents over a million small scale farmers in Africa.

ZAAB watches carefully how corporations extend their influence on policy makers. Africa seems to be seen as the last big market for corporate seeds and chemical inputs. In a number of neighbouring countries indigenous food systems have been pushed into illegality because of legal frameworks made in favour of multinational companies. ZAAB is therefore advocating for farmer managed seed systems for their resilience against climate change and their good nutrition. A slogan that is being used for this work across Africa is "MY FOOD IS AFRICAN". This slogan resonates with the immense cultural and community building power of food, which is already produced predominantly by smallholder farmers and will hopefully remain in their hands as well. Brother Paul would support this by saying: "ORGANIC IS THE FUTURE."

CHAPTER IV

MEETING FARMERS, EXTENSION SERVICES

Following the Trainees - Extension department

Austin Chilala

KATC started in 1974 and since 1975 it has been involved in Extension work. Its extension outreach has grown from working with farmers within 20 Km radius to all parts of the country. Starting with small-scale farmers in Chongwe in Lusaka province (which was later divided into Chongwe and Rufunsa District), it expanded its area steadily. Today districts from six provinces are part of KATC extension projects: i.e Mongu, Nalolo and Limulunga in western province, Lufwanyama in copperbelt province, Kanchomba in Southern province and Katete, Chadza, Chipata and Lundazi



Mr. Lishebo delivering a lesson to farmers

in eastern province. KATC also works with other relevant stakeholders including community based leaders, government extension officers, non-governmental organisations and rural schools.

Extension aims through different communication methodologies, to help rural families help themselves. It instils daily routines of farming, homemaking, family and community living. Follow-ups are done to encourage small scale farmers to practise sustainable organic agriculture principles and practices which are environmentally friendly, economically viable and socially just.

Over the years also its methods have developed. It includes a broad spectrum of approaches like: *Follow up visits.*

Through the extension visits program KATC aims to disseminate, monitor, train and provide feedback on the implementation of knowledge acquired through training. KATC effectively multiplies the number of trained small scale farmers through on farm training in conjunction with government extension officers, traditional leaders, lead farmers and other like minded stakeholders.

On farm demonstration plot and field days.

In addition, KATC extension staff identify key farmers who demonstrate the technologies learnt and assist them to hold field days during the growing season. The field days are usually well attended by surrounding farmers, both men, women and youth. They are enabling strong farmer to farmer learning.

Demonstrations

Demonstrations are a very effective practical training tool. Demonstration plots are set up both at KATC and farmer fields to demonstrate the various sustainable organic farming technologies and practices taught. Practices include the importance of soil organic matter, compost, bokashi, green manures, agroforestry, crop diversity and conservation tillage.

Radio programs

Kasisi Agriculture Training Centre has been recording radio programs as a strategy to disseminate knowledge and to create awareness among the small scale farmers in Sustainable organic agriculture. Radio programmes have been recorded and aired both on national and community radio stations i.e Lwambai and Liseli community radio in western province, Chikuni community radio in southern province, Kasama community radio in Kasama, Breeze community radio station in Chipata, Chongwe community radio, radio Maria Yatsani community radio, Komboni community radio in Lusaka province, Miracle community radio in Copper belt province. Radio programs have also been recorded and aired through national radio station Zambia National Broadcasting Corporation ZNBC and National agriculture information service NAIS.

Meetings

Community based and likeminded organisation meetings have been an integral part in our effort to inform, educate and practise what we teach.

Community mapping.

Community mapping has been one of the extension strategies that helped us to map the communities. It allows farmers to understand their own situations, to analyse it and to develop adequate solutions.

REDUCTION OF COMMUNAL LANDS, COMPOUND CREATION AND SELLING OF LAND.

Changing realities – changing problems.

Deadricks Hadunka

When Brother Paul visited in 1972-1973 the villages around Kasisi he identified a number of burning problems that the people were facing: low annual income, low education level, high mortality rate, poor housing, alcoholism, Immigration, lack of cooperation, lack of sports activities, low capital for farming and cutting off trees anyhow for burning charcoal. Many of these problems are still present today but another burning issue has emerged during the last years – the loss of communal land.

Communal land in Zambia was a social centre of different activities for the village dwellers, it was a place where cattle, goats, sheep and other livestock used to graze from, village dwellers used to grow different food crops and sustain their livelihoods, different creative activities for social gatherings like sports activities were conducted on the communal grounds. It strengthened the cooperation and understanding among community dwellers. Villager dwellers produced good crops in large quantities using environmentally friendly farming practices from these communal lands; they were a great source of natural happiness for many rural women and men. Village dwellers used to earn a sustainable life and earn good incomes from farming activities.

Now a lot of residential compounds are being created right in the centres of the communal lands and taking away huge chunks of land for farming in most villages. Most poor people in the compounds are suffering and wallowing in abject poverty and are both life and food insecure. Most compounds are densely populated, have no adequate clean water and at high risk of many disease outbreaks. Reduction in communal land availability, creation of unplanned compounds in rural areas and selling of land by village dwellers has negatively affected many rural people's income earning base, especially women and those women with children. The winner here is definitely the land property developer who has bought off the communal land and is subdividing it into small residential plots and making huge sums of money. Residential compounds being created by selling of land in the rural community is causing deforestation and creating a lot of greenhouse gases to accumulate in the atmosphere.

Farmers that were producing sustainable food yields have no land to farm and are busy looking for jobs, some have become caretakers of other people's properties and others displaced and have migrated to urban areas to search for greener pastures but to no avail.

Reduction of communal lands and creation of compounds have today seen many people in life insecurity, food insecurity and made many families become desperate destitute. Families with children struggle most, which is a sad development.

Many people have difficult economic circumstances while those that were benefiting from communal land farming ventures are now encroaching either other people's land or encroaching state land reserves and finding themselves on the wrong side of the law. Land encroaching, especially in reserved areas, reduces natural biodiversity bases. Reduction in biodiversity also hurts us in other ways, our cultural identity is deeply rooted in our biological environment. Plants and animals are symbols of our world, preserved in flags, sculptures, and other images that define us and our societies. We draw inspiration just from looking at nature's beauty and power.

What can be done best is to regulate and enhance laws governing communal and customary lands. Many people who have sold off their land are currently regretting their unconsulted

decisions of selling land, because most of them have not used their money wisely and sustainably.

Let us preserve the communal land that we are in custody with, regenerate our land with good farming practices like afforestation because forests are home to much of the known terrestrial biodiversity. We need to serve life on earth in all its forms and keep natural ecosystems functioning and healthy. Stop reducing communal lands by creating compounds and unregulated selling of land, but instead let's build the ecosystem and increase biodiversity. Through Agroecology we all win and survive.

Appropriate technology workshop

Elphas Ndlovu SJ

Brother Paul was greatly helped by collaborators and Jesuits who joined him including Br. Patrick McElduff from 1975 to 1978 who was an experienced farmer and builder. Later from 1982 to 1990, Fr Donal Mckenna began the work of setting up a workshop in appropriate technology. The workshop produced various items handy to small farmers; these included a foot-operated water pump, a wooden scotch cart, and a solar cooker. It is important to note that the equipment and tools made from the appropriate technology work were easy to maintain and affordable to produce.

The Appropriate Technology workshop was established in 1982 spear-headed by Fr Donal Mckenna. The workshop also carried out research and developed equipment and tools suitable for agri-production and household use in rural areas. Products included Ox carts, treadle water pumps, an ox-powered grinding mill, improved neck yokes and harnesses for oxen, a hand-operated oil press, sisal cement roof tiles, wheelbarrows, small weight scales, and biogas digesters. The workshop also gave training to young people in iron smithing and basic carpentry. A three-month course for teachers from local primary schools and practising village blacksmiths was also offered to enhance their skills.

Lars Kildedsted narrates, "In 1989 when I was working on a development project in Chief Mapanza area, Choma District we wanted to start a production of scotch carts as part of the project. We did not want to use ball bearings made of steel but rather some appropriate technology that could be manufactured, maintained, and replaced locally. We found the solution when we contacted KATC. Here, they were working with gliding bearings made from wood. We adopted the technology from KATC and found it very helpful."

In 1994, Fr. Bert Otten SJ came to KATC for a sabbatical. He was teaching at Seattle University Electrical Engineering. In his first year he worked on several projects of the appropriate technology workshop mainly on solar projects like solar cooking, solar water pumps and solar lighting. Later Br. Paul directed Fr. Bert to centre his work more on the construction of the Kasisi Dam, where he did the surveying and the start of construction.

Among the long term collaborators, who worked in the appropriate technology workshop are Mr. Alison Banda, who retires in 2024 after more than a quarter century at KATC.



Brother Paul with a staff member from the appropriate technology observing a scotch cart

CHAPTER V

KATC AS AN INSTITUTION

Demonstrating Organic Agriculture in Practice

Vincent Choongo, Zio Mwale

When Mr. Choongo arrived at KATC in 1991, the Production Unit was not producing any crops for sale, from 1991 to 1995 the land was only used by trainees to grow crops and would sell to Hybrid Poultry. The other part of the land was used by KATC workers to grow crops for their consumption while the centre itself only grew sunhemp, velvet beans, and hay. The hay was used for feeding cattle, whereas the velvet beans and sunhemp seed were distributed in the villages. The farm only had 53 cattle and 20 pigs which helped to generate income for the running of the centre.

From the midst of the 1990s, the idea was developed to become more independent from donor funding and to build a farm in Kasisi as a model farm for sustainable organic agriculture. That was the starting point of developing the Production Unit. Besides income generation, the Unit was supposed to help with hands-on training concerning practicals and to contribute to the advocacy work for organic agriculture. The Production Unit was basically set up into a Livestock and Crops Section.



Mrs Kaioko Namataa and Mr. Alphonsias Phiri at Kasisi Tione fields

Crop Production

By the turn of the millennium, the Kasisi dam was constructed, opening the possibility for commercial crop production relying on irrigation. In 2007, 100 hectares of land were cleared to create circles for centre pivots 1 and 2. In 2010 the first centre pivot was installed. Initially, the centre pivot was moved between the two circles regularly. In 2015 the second pivot was installed. Around 2017, works to clear additional circles commenced this was to pave the way for the (centre pivots 3 and 4). Funding for the clearing of this land was given by the German Jesuit Mission and FACSI. The 2 pivots were pledged by a project financed by the World Bank. Unfortunately, to this

day the centre pivots are yet to be delivered. Currently, only parts of centre pivot 3 are used to produce rainfed crops.

In the first years of crop production manure was plenty available because neighbouring farms just considered chicken manure a waste. A compost turner was purchased and chicken manure from Galaunia farms and cow manure from Diamondale farm was transported to KATC. At the peak, about 300 metric tonnes of compost were produced annually. Over the years more and more farmers became aware of the value of manure and it became more and more difficult to secure it.

Over the years KATC collaborated with Chaminuka and the airport to produce hay bales and with ZNS airport farms to bale the wheat straw. In this way feed for the animals and biomass for the compost production was acquired.

Whilst soybean and wheat were produced for the local food processing companies. Seed maize was sold to NGOs and individuals looking for organic maize seed. For some years KATC produced barley for Zambian breweries through CHC which acted as a broker.

After having tried planting a few handful of oats, which performed well. KATC grew its first consignment of oats for export to Zimbabwe. Oats were also used for feeding livestock. From 2018 onwards KATC began producing oats for the processing of rolled oats. A growing market for this product required a focus on oats as a winter crop.

The main challenges that crop production encountered were weed management during the rainy and post-harvest management of the crop.

Livestock Production

Initially, KATC was only keeping beef cattle. Brother Paul first purchased cattle from the villages around and started slowly to improve them by crossing them to better bulls. Over the years the number of cattle raised to about 400. As the centre was promoting strongly draft animals, many animals were sold at affordable prices in the villages around.



A staff member from the piggery section working on the biogas digester at Kasisi Agricultural Training Centre

In the mid-1990s, the first 5 dairy animals were introduced. Over the first years, bulls were used for breeding, only since 2014 artificial insemination was introduced to KATC. Since 2016 systematically Fleckvieh semen has been used to build a dual-purpose breed that is adapted to the tropical climate. As over the years the share of Fleckvieh genetics in the herd increased, now as a next step bulls from the herd can be selected for family breeding to increase the local adaptation. Over the years the size of the dairy herd has increased to about 100 animals. With an extensive feeding regime, the animals can give 15 litres of milk. About 30% is processed directly in Kasisi and the rest is sold to Zammilk via the Ngwerere Dairy Cooperative.

In line with the efforts of Fr. Roland Lesseps in promoting Agroforestry fodder trees were planted in different parts of the farm. The fodder bank consists of *Glyricidia* and *Leucaena* species. Additionally, some trees producing seed pods suitable for livestock were planted like Musekesi, and different acacia varieties were grown.

The manure from cattle is collected in night kraals and brought back over through composting into the fields.

The pig production stopped some years ago due to African swine fever. It was started again in 2020 with 4 breeding sows and since 2023 another 5 sows have been purchased. During this time already 2 outbreaks of swine fever led to a prohibition of sales in Chongwe District.

Over the last 25 years the production unit has developed from small beginnings into a big enterprise. The Production Unit has indeed become key in the running of the training centre, as many other services are directly dependent on it.

Kasisi Dam

Bert Otten SJ

On a sabbatical from Seattle University's Electrical Engineering Department, I was working at the KATC Appropriate Technology Workshop on projects like solar lighting, solar cooking, solar water pumping, etc. KATC's main focus was to train local farmers in sustainable farming. It had a water problem with its water source, Ngwerere River. It was dry most of the year. A dam controlled by commercial wheat farmers upstream blocked the flow. After several meetings and attempts at agreements to get water once a week, etc., failed, Brother Paul decided that the only feasible solution was to build a dam at Kasisi to capture water during the rainy season for the rest of the year.

Since I was an engineer, Paul asked me to get involved. Although a registered PE in the USA, I had little knowledge and no experience of civil engineering. Paul borrowed a surveying Dumpy level with a 12-page instruction manual from a neighbour. With the manual and KATC workers I would survey a possible site for the dam after hacking through the bush. Then in a day or two, Paul would say, "You know, if we move the dam a little farther, we could impound more water." The *Magis* in action! Then we would survey a new site. This happened four or five times until we arrived at the present location.

Br. Paul had met John Williams, a delightful, old (actually, he was only in his 70's, I think.), Born-again, VMI, British volunteer who had built 99 earth dams in Southern Rhodesia in his day. He taught me how to check the site, what soils to use for what purposes, design the dam, and so on. He would come on site now and then to see how things were coming and make helpful suggestions. Paul had my drawings professionally drawn and the project approved by the appropriate government agencies.



Water pump at the Kasisi Dam



Fr. Bert Otten with a crew observing the newly constructed Kasisi Dam

To move the large quantities of earth, we used two tractor-pulled dam scoops. The dam had to be completed in one dry season. If a little water went over the top, it would start the erosion process which would destroy the whole dam in a few hours. We did time and motion studies to get efficient transfer the large amount of the various soils required. At one point, we realised that we could never finish the dam in one dry season using the dam scoops. They could not move soil fast enough.

Paul's resourcefulness took him to the Zambia National Service, a military civil engineering unit of the government. It turned out that the NS had a cash flow problem even though they had the needed heavy equipment. Paul stuck a deal. NS would do the job at cost since ours was a patriotic cause, and they needed cash to keep operating.

Paul had collected money from various sources for the project. The bank in the Bahamas where he had saved the money collapsed. Without pausing to process the loss, he started collecting all over again. He received half of the required amount from the German bishops and half from a Jesuit fund for projects in developing countries.

When my sabbatical year was finished, I had added a year's leave of absence from SU. I returned to the USA in August of 1996. Mr. Joseph Pakati, a recent NRDC graduate, took over the engineering work.

In the USA I was receiving emails of progress. They were working Saturdays, Sundays, Christmas, Easter, and holidays to keep the height of the dam a few inches above the rain season's rising waters of the lake behind the dam. Fortunately, they were successful. We have the dam and lake even today.

GRAIN PROCESSING

Kadonsi Naomi G. A.

The grain processing at KATC consisted initially only in cleaning harvested grains. This was just part of postharvest handling and preparation of grain or seeds for the selling. Therefore, most machines used were manual and labour intensive. When KATC started to scale up the production by installing 2 centre pivot irrigation system, improved machinery was needed and KATC started using a fully automatic seed-cleaner from the Spanish company Moresil. The seed cleaner is able to clean, sort and grade maize, soya beans, Kabulangeti beans, sunflower, wheat and oats. Only the sieve needs to be changed for the different grain sizes. As in Zambia normally no premium prices for organic certified crops are paid and KATC wanted to produce mainly for the local market. KATC started to explore other options. The ideas went along the lines of thinking around: "Value Addition" and "Value Creation". Value addition meant to further process the grain into a marketable product. Secondly Value Creation meant placing on the Zambian market a local organic product. This meant for KATC the need to build up a processing plant and to develop its own distribution and marketing channels. The target was high but also the time seemed to have come.

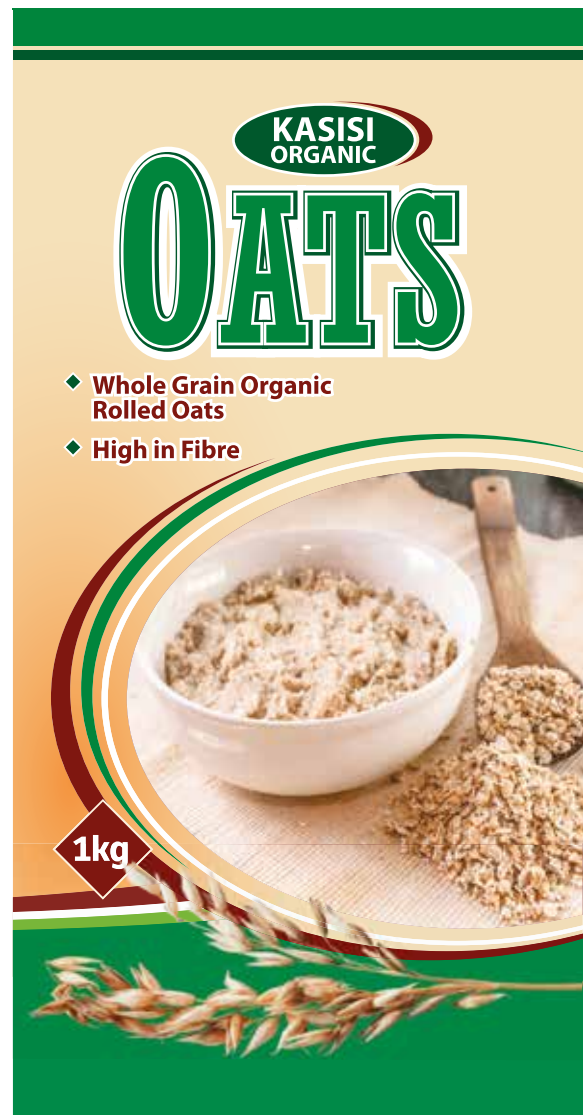
In recent years, Zambia has seen a resurgence in the organic movement, as more and more farmers and consumers turn away from genetically modified organisms (GMOs) and embrace organic and conservation farming practices. This shift is driven in part by concerns over the potential health and environmental impacts of GMOs, as well as a growing appreciation for the benefits of organic food and seed. This growing health trend gave KATC the confidence to find a position in the local market.

In 2018/2019 with the help of a number of different donors and the National Technology Business Center (NTBC) a production line for rolled oats was established. KATC had already experimented the production of oats and knew about its suitability for the Zambian climate and soils. It was mostly used for livestock and fed as grain, forage or fodder. Later, the idea to make a natural, healthy, and nutritious breakfast cereal was developed by combining 3 mega trends in one product.



Oat Grains

The following machines were therefore installed: a) the seed cleaner, b) the dehuller + blower, c) the roaster, d) the roller mill. Additionally, 2 flour mills from Austria were imported. The primary processing for oat is Groats, which is the naked and roasted grain. From which further products like oatmeal and rolled oats are made. Health enthusiasts eat porridge made from groats because it is the least processed and most natural. To make groats, oat is first cleaned and graded in the seed cleaner, then run through the dehuller, which removes the husks that are tightly enclosing the grain. The dehuller is attached to a blower that blows the husks away from the grain. This process is called pulverization. After this, the oat is cleaned again in the seed cleaner and returned to the dehuller again. This process is repeated thrice, to completely rid the seeds off the husks. The husks are not a waste but used later for livestock feeding. After dehulling, the groats are roasted in the roaster at 180 degrees Celsius, for the main reason to deactivate the enzymes that give a rancid taste to the oats which is not desired. Beyond that, roasting helps to sanitise the grain, to extend the shelf life, to add taste and to help in the rolling process to obtain good flakes. The rolled oats are then packed in 1Kg plain paper bags, sealed and packed in labelled boxes. The products are then ready for sale as Kasisi organic oats. They can be found in supermarkets, like Shoprite and Melissa, but they are also sold in smaller/local shops. All the packaging material used is biodegradable.



Kasisi Organic Oat 1Kg Package

Beside the KATC flagship rolled oats, also groats, oat flour (and if wheat is available also wheat flour as whole-grain, semolina 1 and semolina 2) is produced. There are a number of other grains that are sold as raw products, only cleaned and packaged to the customers.

In the Future, Innovative organic Oat products will have greater opportunity since gluten allergy is rampant worldwide. As the Zambian food system is in a crucial transitioning process where different trends realign the establishment of a local organic segment has high potential need. KATC plans to replace the roasting in the process by steaming, which preserves more natural compounds of the oats and at the same time increases the shelf-life to make the oats more marketa

Good to know:

Food uses for oat include: oatmeal, oat flour, oat bran and oat flakes. At KATC, oats are mainly processed for porridge or sold as rolled oats, Groats or whole grain flour. There is a growing demand for oat based products in the country because of its health benefits. They are high in protein and fibre. The protein of rolled oats is generally greater than that of other cereals. Many of the vitamins and minerals in oats are in the bran and germ, and most oat food products use the entire Groat. Rolled oats (oatmeal) is produced from 100% dehulled, clean oat groats by roasting and rolling, and that provides at least 4% (dry-weight-basis) of beta-glucan soluble fibre with a total dietary fibre content of at least 10%. Whole-oat flour is produced from 100% dehulled, clean oat groats by roasting and grinding, such that there is no significant loss of oat bran in the final product, and provides at least 4% (dry-weight-basis) of beta-glucan soluble fibre and 10% total dietary fibre.

Dairy Processing

Markus Schär

The establishment of a small milk processing plant was the main achievement of my assignment at KATC from 2015 to 2018. As an Organic Dairy Farmer working for COMUNDO, a Swiss Personnel Development Cooperation Organization, I supported the KATC production unit to find new sources of income through value addition. Brother Paul had seen an opportunity in the lack of locally produced organic dairy products in Lusaka's shops and supermarkets, and with my experience in dairy processing we aimed to create a niche market.

After having successfully done some fundraising in Switzerland, we bought equipment in Zambia and Europe and converted a room at the conference centre into a small processing plant. A solar hot water system was put on the roof, a water tank was erected, and a genset was put into operation by the construction and maintenance team. All this came with both challenges and opportunities to learn for both sides.

I developed a product line, which consisted of feta, halloumi, fresh cheese, white mould cheese, cream, sour cream and yoghurt. Brother Paul brought in Mr. Konsolo, an experienced milk processing expert, who had been working at the Kaposhi dairy plant in Chaminuka for many years. Mr. Konsolo did not only help me to take up production but became an invaluable cultural translator for me and the project.

With great help from Sally Smith, a very much appreciated neighbour in Kasisi and the founder of Organic at Heart and African Butterfly, we established distribution channels in Lusaka. Amongst our clients were The Green Shop, Umoyo, Debbenfeld's, Organic at Heart, Majoru, The Pantry and The Green Fox. Each week Mr. Tembo, the driver, and I drove into town to deliver our milk products and to buy supplies for the processing.

After our figures had shown that artisanal milk processing with simple equipment could be profitable, a young and dynamic food technologist, Mr. Simukonda, was employed in order to take over the lead of the milk processing, as my assignment came to an end in 2018 and I returned to Switzerland.

Besides the mentioned personnel, many other staff members and workers contributed to the success of the dairy processing. I worked closely with Mr. Kunda, the livestock supervisor, Mr. Shanyinde, the leader of the construction and maintenance team, and of course with Brother Paul and Dr. Kalinda.

Still today, I'm very grateful to KATC for having given me the opportunity to familiarise with a cultural cosmos previously unknown to me. I believe that the intercultural learning, though not free from misunderstandings and challenges, did not only enrich my own life but also the experience of my Zambian colleagues at KATC.

Happy anniversary KATC, and musale bwino!

A plea for Sustainable Organic Agriculture

Fr. Dondo Bena Benoit, SJ.

Sustainable Organic agriculture is a farming system which is environmentally friendly, economically worthwhile and socially just. It promotes diversity and values the principles of Agroecology by strengthening the beneficial exchanges of biological interconnections originally found as such since the creation of the Earth.

It has been observed that the most difficult part to understand sustainable organic agriculture is the lack of knowledge on the matter. A key question is: "What is the difference between biological/natural agriculture and sustainable organic agriculture?" Under biological farming, farmers exploit nature as much as possible. Though it doesn't use conventional inputs, it ends up exhausting nature as the soil remains unfed. In contrast SOA sustains soils, putting extra care to build them up rather than exhausting them. This is the foundation of healthy plants and healthy food. Additionally this provides greater climate resilience of crops and livestock. It creates a healthy environment without harmful chemicals that endanger producers and consumers.

What is new in SOA?

The concept of Organic farming is not new at all but its principles need to be revived and carefully repossessed in a manner of office duty but on the land with Chaka hoe in hand.

The other thing that seems new is a call to change the mindset. Rather than only maximising profit, farming needs to be understood as a vocation putting at the centre heart of producers and consumers while keeping the future safe.

A journey of discovery

The green revolution was preached by the western world as the way to increase food production to nourish the world population. In the beginning the use of conventional fertilisers showed a real increase in productivity. But 17 years down the line, the decrease of yields were observed and quickly a realisation of soils' depletion was made, afterwards. The absence of microbial life was observed in these soil. More and more fertiliser had to be applied but yields continued to decrease.

Work was supposed to be done to cure the situation, and this was no other than organic farming by the use of compost, green manure crops, animals manure application to the fields, intercropping, rotation,

The discovery of the journey has been so relevant to the whole world. It has been successful to see that only practices implying harmoniously living are solutions to the main problems we have created over years of Earth destruction. All is in nature, we have one duty, it is to cooperate and adapt ourselves in adopting relevant and sound methods for safety in productivity.

Sustainable Organic Agriculture: for the elite?

Many people think that only the rich can afford this way of farming, because it involves too much work. Organic farming is painted to be costly. But more costly and risky is conventional farming as it relies heavily on expensive inputs like fertilisers and chemicals. Even one claim can be made: "This farming system is the way of entering into a path of ultra-low-cost agriculture here in Zambia as well as around the world.

Patience pays!

On the other hand it is true that there is much work to convert from conventional farming to organic. This takes the first 3 years. Once the conversion is accomplished and the farm has found a new equilibrium, work load reduces and yields increase. In our 33 years of organic farming experience, small scale farmers have been able to improve their livelihood. The holistic way of farming reconciles making profit with the divine call of caring about the earth.

Sustainable Organic Agriculture: Assumptions or facts to prove?

For more than a decade, trials have been conducted on different principles of organic farming, both from local and overseas universities.

With obtained results, we can assure every farmer around that Sustainable Organic Agriculture is the way to go for anyone who doesn't want to deplete his/her soils and disturb the environment. Care of the environment is a care for humanity and still the only way of caring about mankind's safe future. This year seasoned farming had shown, for rain-fed small scale farmer systems, organic farmers are able to harvest grains regardless the harshness of the drought spell, while the conventional ones are observing total failure of the crops;

Why the organic way?

Using agroecological practices have helped to discover the core secret to successful farming where both inputs and productivity are concerned.

At Kasisi Agricultural training Centre, this way has no return as the results obtained on the ground are satisfactory, both at small scale as well as commercial farming. Our soils are sustained and the biodiversity is being regenerated where destructive methods were applied some years back.

One needs only to feed his/her soil, then all problems linked to fertility, water and pests' management are naturally taken care of by nature itself.

Sustainable Organic Agriculture in case of African Soils.

One thing which needs to be mentioned is that soils are not all the same around the world; not even in a single given region as the rock mother may not be of the same characteristics. In the context of Africa, Sustainable Organic Agriculture is a better way to go; because our soils are vulnerable and have less organic matter amounting up to 5% only in the best soils that are organically managed. Mainly the organic matter is at around 1%.

In the current global warming situation, Sub-Saharan African Countries have no other alternative of farming other than organic farming. If they aim to escape desertification, by the loss of diverse plants and wild animals' species. This means training farmers in soil and land management is more than needed to preserve future calamities. "The most recent assessment of soils degradation in Africa (1991) found that 227 million hectares (16%) of the continent is affected by water erosion, while wind erosion affects 186 million hectares, loss of nutrients affects at least 45 million hectares, and soil salinization affects around 15 million hectares." (Healthy Soil for Healthy Communities, page 5).

It is unfortunate that Africa hasn't yet developed a strong strategy towards soils and land protection to ensure future sustainability and existing laws about land use seem not to be rigid enough to protect soils from destruction.

Conclusion

75% of all food is produced by small-scale farmers. They need support for food sovereignty and security. Sustainable organic agriculture is the way to go.

We need to feed all generations with safe food which is grown and produced organically. We do need unsafe food in enormous quantities by good and safe food, which is nutritious. Let us all go the Sustainable Organic Agriculture way to keep the world healthier in all its dimensions, population wise as well as environmental wise.

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