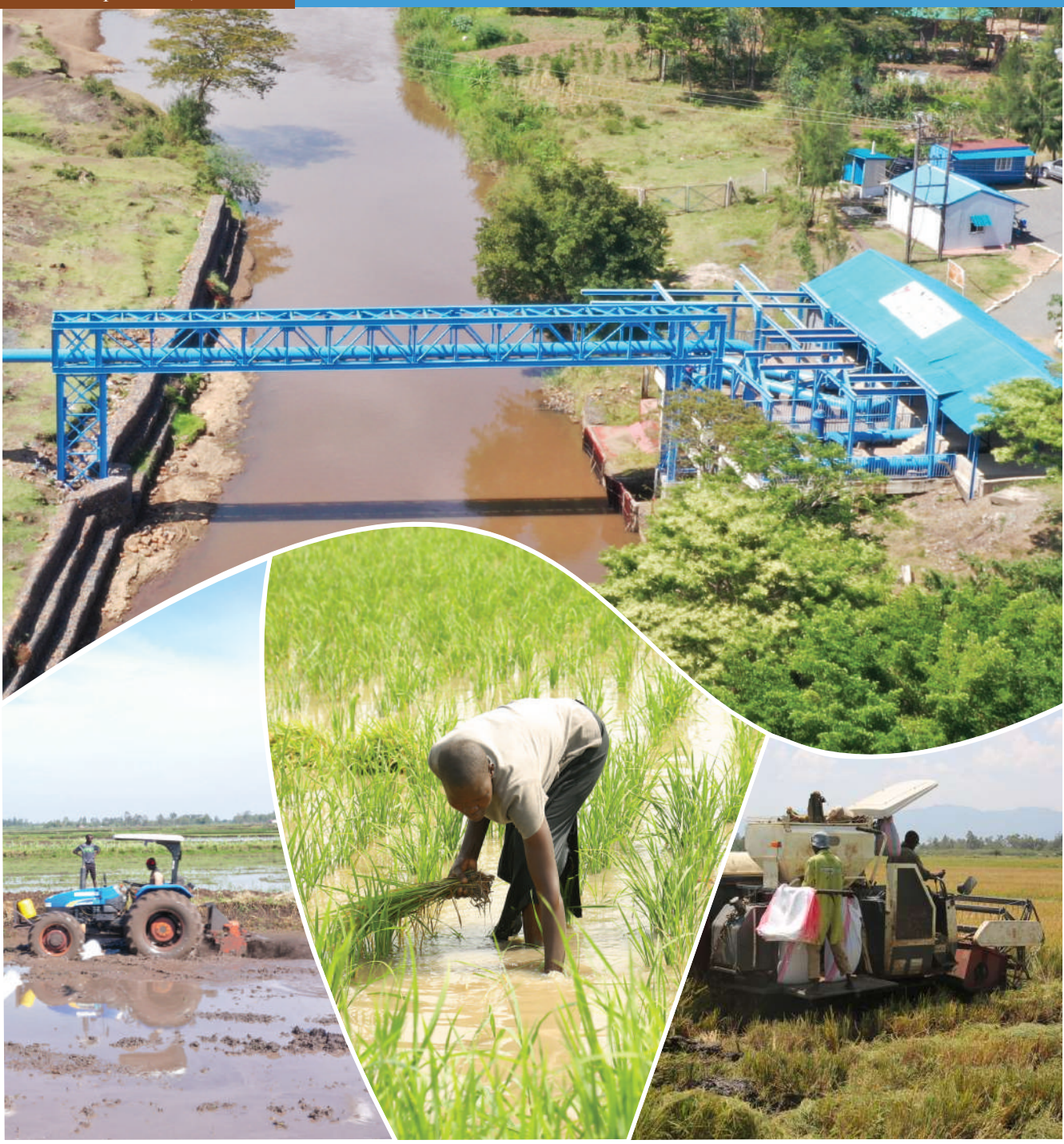
National Irrigation Authority

IRRIGATION NEWS

"Western Kenya Irrigation Schemes Special Edition"

17th Issue

April - June, 2023



A publication of National Irrigation Authority

ISO 9001 : 2015 CERTIFIED

KENYA VISION 2030

A quartely publication

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To download a copy of our Newsletter and share feedback, visit our website
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Printed by: Naiya Limited
P.O Box 22- 00300 Nairobi, Kenya
Tel: 0704 312 870

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Editor's Note



Mr. Daniel M. Nzonzo, HSC.
Principal Corporate Communication Officer

Welcome to the 17th edition of Irrigation News.

In this issue we turn to Western Kenya Irrigation Schemes, focusing on Ahero and West Kano and their expansion areas as well as Ahero Irrigation Research Station. Through engaging articles, we explore their history, farming marvels and innovative approaches used to optimise irrigation efficiency and promote food security in line with the Bottom-up Economic Transformation Agenda (BeTA).

This edition provides valuable insights that should spark discussions on the ever-fresh topic of irrigated agriculture and as such give you the opportunity to share your insights on the discoveries.

Thank you for engaging with us on this journey as we delve into the world of irrigation. Together let us explore the transformative power of irrigation and initiate a thriving future for Kenya's agriculture.

Happy reading!

Chairman's Note



Eng. Gilbert Maluki
Chairman of the Board

It is with a deep sense of honour and responsibility that I assume the position of Chairman of the Board of the National Irrigation Authority. I am grateful to His Excellency the President Hon. William Samoei Ruto, PhD, C.G.H for entrusting me with this responsibility. The Board, under my new leadership, is committing to fully contribute to increasing agricultural productivity to lower the cost of living in line with the Bottom-up Economic Transformation Agenda (BeTA).

I also acknowledge the remarkable contributions of my predecessor, Hon. Eng. Joshua Toro, REng, MIEK, who served the Authority with distinction for four years. Under his guidance and close working relationship with the Management, the Authority initiated many projects that have laid the foundation for our future success.

Building on this foundation, the Board is resolute in supporting the Management fulfill all the ongoing irrigation initiatives. Our primary focus will be offering guidance as we develop irrigation infrastructure for water abstraction and conveyance to potential areas across the country. To achieve this, we will give priority to innovative ways of water harvesting and the adoption of top technologies to enhance efficiency and improve management of our irrigation water resources for food security and economic growth. We will explore means of digitising agriculture through the integration of smart valves and telemetry into our irrigation infrastructure.

I firmly believe in the power of partnerships and with my experience and networks in the private sector, the Board will work closely with the Management to bridge the resources gap and seek additional financing to be able to implement our mandate as captured in the Irrigation Act 2019. We will actively pursue additional resources through climate financing, donors, grants and private parties through the Public Private Partnerships.

We will also engage County Governments to ensure formation and operationalisation of the County Irrigation Development Units (CIDUs). These units will play a key role in the implementation and management of smallholder irrigation projects of 100 acres and below. The farmer Organisations across our Schemes and Projects form part of our key strategic partners. The Board will work very closely with the Irrigation Water Users Associations (IWUAs) across our Schemes and other farmer groups to ensure fair sharing of irrigation water for sustainable cropping.

I appreciate the warm reception and the exceptional positive attitude, dedication and focus I have witnessed among the Authority's staff. Your unwavering commitment to our mission and vision is commendable; let's join hands to take the Authority to the next level.

Word from the Ag. CEO



Eng. Charles Muasya
Ag. Chief Executive Officer

I extend a hearty welcome to our newly appointed Principal Secretary, Mr. Ephantus Kimotho, and Board Chairman, Eng. Gilbert Maluki. They are joining the irrigation sector with immense knowledge and experience from the private sector.

They have come at an opportune time when the Government has adopted implementation of irrigation projects through Public Private Partnership (PPP) financing model. They will play a key role in assisting the Authority to attract resources from climate financing, development partners and donors among others as we strive to realise the Authority's mandate as stipulated in the Irrigation Act No. 14 of 2019.

Together, we will be able to actualise our development agenda of bringing down the cost of living, eradicating hunger, creating jobs, improving foreign exchange balance and delivering inclusive growth through irrigation in line with the Bottom Up Economic Transformation Agenda (BeTA).

I am happy to report that we have made significant progress in the expansion and enhancement of irrigation infrastructure for continuous agricultural production across the country. All our public irrigation schemes and completed irrigation projects are under production. Currently the total area under irrigation across the country stands at 670,000 acres. According to the National Water Master Plan 2030, Kenya's irrigation potential without water storage is at 1.913 million acres and three million with enhanced water storage.

The Authority, in line with its strategic plan, is putting in place measures to increase the area under irrigation to be above one million acres in the next five years and contribute to job and wealth creation. Every acre put under irrigation creates five direct jobs with some 3,350,000 direct jobs today tied to irrigation. Millions others indirectly benefit from irrigation and continuous investment in the sector will help the country to achieve food security.

During the fourth quarter, the Authority continued to implement the Presidential Directives on Galana Kulalu Food Security after H.E the President Hon. William Samoei Ruto, PhD, C.G.H on January 3, 2023 directed that food production start through PPP with the NIA representing the government.

It would start with maize production on 10,000 acres that are already installed with irrigation infrastructure and an additional 10,000 acres be prepared for production under PPP, with the NIA constructing a dam to put another 350,000 acres under food production.

In compliance with this directive,

the Authority engaged Twiga Foods to undertake production after they submitted a Privately Initiated Proposal (PIP) — which was approved — on production on a 10,000-acre model farm and development of an additional 10,000 acres. The development phase entails maize production trial on 538 acres and technical studies for the proposed 20,000 acres as well as preparation of detailed proposal. The investor has established maize crop for trial on 538 acres where four varieties of the crop have been planted and are progressing well. The investor is carrying out studies on soils, irrigation systems and crop water requirements in readiness for expansion as per the presidential directive.

On Implementation of the Galana Dam directive, a Privately Initiated Proposal by a private investor has been evaluated and forwarded to the PPP Directorate. The Authority is reviewing another PIP on development of the additional 200,000 acres from another private investor.

The Authority has also made strides in the implementation of High Grand Falls Dam through PPP. The PIP for the dam that will benefit the residents of Garissa, Kitui and Tana River counties has progressed to project development phase for six months ending in September. Upon successful negotiation, we expect financial closure and signing of commercial and concession agreement. The dam will provide water for irrigating 400,000 acres and generating 780 megawatts of electricity, greatly increasing food production and reduce reliance on imports. The energy generated will help reduce the cost of power.

To produce the targeted one million tonnes of rice annually by 2027, the Authority is developing a road map to put an additional 200,000 acres under production. We will therefore give priority to the expansion of rice growing in Schemes like Mwea, Ahero, West Kano and Bunyala. There are also plans to increase rice production in new frontiers like Tana River, Garissa, Migori, Taita Taveta. Such investments will help to stop importation of rice while creating jobs for thousands of Kenyans.

As we continue our journey towards sustainable irrigation, we are committed to embracing innovative technologies and practices. We understand the importance of efficient water management and are actively exploring modern irrigation techniques such as drip irrigation, precision agriculture and use of smart meters to optimise water use and maximise crop yields. Use of solar energy as an alternative means of water abstraction in our Schemes and Projects is top on our agenda with a special focus on Tana Irrigation in Tana River and Usueni Irrigation Project in Kitui County earmarked as pilot projects.

As we start the 2023/ 2024 financial year, I appreciate all the farmers for their resilience and commitment to continued food production despite the effects of climate change. As we continue to tap to immense resources in the private sector and invest in climate-smart agriculture, let us scale it up.

To the Authority's staff, let us continue playing our part in reshaping our agricultural environment and safeguarding the country's food security.

The journey of Ahero irrigation scheme



Farmers threshing paddy in Kano plains on April 1960.



By Teresia Njeri

The National Irrigation Authority is implementing two irrigation schemes in Kisumu County, namely Ahero and West Kano.

In 1953, a team of British experts conducted a feasibility study to establish the region's suitability for irrigated agriculture and it was endorsed due to its black cotton soil and adequate waters from River Nyando and Lake Victoria.

This led to the construction of the Ahero Scheme from 1966 and its operationalisation in 1969. Before the construction, residents were resettled since the farms could only accommodate 519 people while the population was bigger. The rest were given settlement alternatives.

After the resettlement, farmers were given seeds and their farms were fenced to prevent crops from domestic animals intrusion. The farmers had to comply with the colonial government rules or risk expulsion.

Each farmer got four acres from the Scheme, starting off with the rice variety commonly known as 'Sindano' (IR2793) in 1969, but they struggled with production due to little or no know-how. Under the leadership of Jomo Kenyatta, Kenya's founding President, the government continued to support the Scheme through the National Irrigation Board (NIB) as the NIA was then known.

The NIB was responsible for, among others, maintaining the irrigation Scheme, assisting farmers in marketing their produce and supporting production through land preparation and harvesting.

When paying the farmers, the Board deducted the production costs, something that annoyed the farmers, leading to a revolution that caused the collapse of most of the irrigation Schemes in the country.

In 2003, the then President Mwai Kibaki revived the schemes by implementing new strategies and reforms that culminated in rebranding to the National Irrigation Authority (NIA) in 2019.

After the reforms, the NIA now provides irrigation services while farmers market their produce.
This has transformed Ahero

into an industrial zone with a rice production exceeding Sh3 billion. After the installation of a modern mill, which is 95 percent complete, this output is expected to be enhanced.

In the past five years, the NIA has expanded Ahero from 2,168 acres to 13,000 acres. Currently, the Scheme has a gazetted area of 4,176 acres.The area under irrigation infrastructure is 10,810 acres which includes Ahero and it's expansion namely:Okana,Mbega,Kore,Nokiso and Masune from where 22,000 metric tonnes of rice are produced annually.

The West Kano project was initiated in 1974 and operations started officially in 1979. This area was previously inhabited by fishermen before the government converted it into an irrigation Scheme. This transformation involved de-silting and installation of pumps by the national government for both rice and sugarcane crops, but due to limited market opportunities for sugarcane, rice became the primary crop.

Currently, West Kano's irrigation waters are pumped from Lake Victoria and conveyed through main canals managed by the NIA. The project stands out for its gravity approach to water abstraction and pumping. In certain seasons, a designated section of the scheme cultivated IR2793 rice resulting in a harvest of five thousand tonnes.

The NIA is proposing the use of upstream water to irrigate Ahero, South West Kano and West Kano regions, an initiative aimed at irrigating 30,000 acres.Currently,West Kano has a gazetted area of 4,450 acres with 2,230 acres under irrigation from where 7,900 metric tonnes are produced annually.On the other hand,South West Kano has a gazetted areas of 12,200 acres with 4,500 acres under irrigation leading to a production of 6,244 metric tonnes of rice annually.

How collaborations give Western Kenya rice farmers deep roots



By George Maina

Agriculture's contribution to Kenya's Gross Domestic Product (GDP) stands at about 25 percent, placing the sector as a key pillar of the economy. It is a top employer that is slowly attracting the youth that are keen on being their own bosses thanks to technology.
However, the sector faces many challenges, including erratic rainfall patterns, limited access to water sources, modern storage technology, value addition and access to markets.

> *Collaborations have played a key role in enhancing agricultural productivity and food security.*

In Western Kenya Irrigation Schemes (Ahero and West Kano), where these challenges are particularly pronounced, collaborations are turning fortunes around. These collaborations have played a key role in enhancing agricultural productivity and food security.

These partnerships involve government agencies, Non-Governmental Organisations (NGOs), research institutions, and the local community. By pooling their resources, expertise and knowledge, their walking together helps to address the various pain points.

The government through the National Irrigation Authority (NIA), along with international NGOs such as Japan International Cooperation Agency (JICA), has



A farmer inspecting his IR rice in Ahero Irrigation Scheme

actively supported irrigation development in Western Kenya Irrigation Schemes. They provide financial support, technical assistance and capacity building to help farmers enhance productivity.

In the tie-ups with the NIA, JICA has supported performance efficiency of the pump-fed irrigation system in Ahero which was evaluated in the 2022/2023 financial year using performance indicators under hydraulic performance, agricultural productivity and financial performance categories of the International Programme for Technology and Research in Irrigation and Drainage (IPTRID).

County Government: The County Government of Kisumu in 2022/2023 in collaboration with the Ministry of Environment, Climate Change & Forestry provided a drone to spray the correa birds which has been invading rice fields. According to Mr. Kennedy Ouma, the Schemes manager, "Birds have really affected the production of rice in the schemes. Last season only, the production dropped from 2.8 tonnes to 2.5 tonnes per acre as a result of birds invading rice. West Kano Irrigation Scheme was highly affected." In the coming season, the Authority has notified the county government and Ministry of Environment to arrange how to help farmers deal with the menace of birds.

Research Institutions: These institutions have played a crucial role in developing and disseminating knowledge about rice, irrigation technologies, pesticides and fertiliser application. Previously, Basmati rice was the main crop in Ahero Irrigation Scheme, but through NIA collaborations, KALRO and IRRI have developed others such as IR and Komboka that do better. "IR variety has a higher yielding capacity compared to the Basmati variety. Farmers are able to harvest more bags of IR and Komboka compared to the Basmati variety," said Mr. Ouma.

Community-Based Organisations: CBOs have emerged as important actors in Western Kenya's agricultural landscape. They bring together farmers, local leaders, and other stakeholders to collectively address irrigation-related challenges. The CBOs facilitate knowledge sharing and encourage the adoption of irrigation technologies suitable for their schemes.
In partnership with the NIA, CBOs such as Kilimo Trust have trained farmers in crop rotation while Yara Fertilisers has introduced improved varieties. Other organisations such as Agrized Machineries help farmers with land preparation and harvesting machines, playing a key role in enhancing productivity and food security.

Residents, academic institutions, government entities, and NGOs are actively involved in these relationships, which developments have helped farmers to increase production and therefore cut imports while improving farmers' earnings.

Chang'aa brewing location now thriving in rice farming



By Johnbosco Obonyo

In the lush greenery of the countryside lies K'Ochieng village in Kisumu County. For generations, the locality was known for producing 'changaa' brew with some relying on it as the primary source of income.

However, the village is reformed, going from a hive of illegal alcohol brewing to a thriving centre of rice farming, revealing the community's tenacity and resolve as they worked towards a better and more sustainable future.

The Scheme in Kadibo Sub County, which was launched in 2020 by the National Irrigation Authority (NIA) as an expansion of Ahero Irrigation Scheme, now produces rice and other crops contributing to the country's food basket.Steve Tuju, 40, a patron of the K'Ochieng project, says residents requested the National Irrigation Authority through the then Scheme manager, Mr. Joel Tanui, for support in converting the region into a farming zone.



A farmer in her rice field inAhero Irrigation Scheme

K'Ochieng is under Okana expansion area that also comprises Kamdiri and Kagaya. The three Schemes have a combined 7,500 acres, which can be put under rice production. Currently, they have 2,500 acres under rice. More than 5,000 tonnes of rice were produced by the three schemes last year.The swampy K'Ochieng was favourable for rice but extremely challenging for other crops like maize and sorghum. Residents initially tried their hand at sorghum cultivation in collaboration with Kenya Breweries Limited, but gave up because of poor results. Today, farmers harvest 40 to 45 bags of Komboka paddy rice on an acre each season, earning them up to KSh200,000. "During the last planting season, I harvested 76 bags of paddy rice from 1.5 acres. Together with JICA, the Authority has given farmers excellent support. They have provided enough water and other agricultural inputs, farmers anticipate a large crop this year," Kingstone Oduor, a farmer, said."The young people are currently working in farms. The den is no longer there, and the people who once brewed chang'aa have started farming. More than 200 farmers are participating in the Scheme, and as it continues to expand, that number is anticipated to increase," Mr Oduor said. The programme is boosting education and livelihood because beneficiaries earn more than KSh150,000 per acre.

Mr Oduor, 27, asked the youth to pursue farming rather than

waiting for white collar jobs that are non-exist. He bought a tractor using farming income.Mr Oduor grew tomatoes before moving to other vegetables. “I could grow vegetables and earn KSh3,500 per week. As a result, I developed a greater interest in farming,” he said. Other than rice farming, he prepares fields for KSh4,200 per acre using his tractor.From four acres, he harvests about 180 bags of paddy rice that earns him between KSh600,000 and KSh800,000.

“

Mr. Kingston Oduor

The young people are currently working in farms. The den is no longer there, and the people who once brewed chang’aa have started farming.

Moses Aguko shifted from growing tomatoes to rice due to the crop’s high yields. “I would invest a lot of money in producing tomatoes, but with little return, I decided to try my hand in rice farming, which has increased my income,” Mr Aguko said. He expects 40 bags per acre from five acres.

A mother of three, Jemimah Otieno began cultivating paddy rice in 2022. She harvested 88 bags on her 2.5 acres last year, which gave her enough money to feed her family and pay her children’s school expenses. Peninah Opondo, the Chief of K’Ochieng East, says the Scheme has enhanced quality of life in her location. “Rice farming has significantly decreased illicit brews in the location. Our young people are busy in farms,” she said. A rice farmer herself, Ms Opondo says she expects to harvest 720 bags of paddy rice this year from 18 acres. A kilogramme of paddy rice goes for between Sh55 and Sh63.

According to Mr Kennedy Ouma, the manager of Western Kenya Irrigation Schemes, Okana Project produced 5,302 tonnes of paddy rice on 2,652 acres, which is equivalent to KSh212.1 million with more than 16,000 acres in agricultural production.The Western Kenya Irrigation Schemes cover Ahero, West Kano, South West Kano, and community irrigation projects and has been expanding over the past three years to include Okana, Mbega, Kore, Nokiso, and Masune.

The National Irrigation Authority is supporting more than 5,000 farmers under the community schemes. Growers in Okana depend on seasonal streams which they say sometimes reduce water supply, hitting productions. Fortunately, plans are afoot to make it possible for farmers to access adequate water. Kenya produces averagely 180,000 tonnes of rice per year, which is far less than the consumption demand of 720,000 tonnes.

Farmers have embraced a non-aromatic variety of rice to reduce losses caused by bird invasion. The expansions target to add 14,000 tonnes of rice to the national food basket. Mr Ouma said Western Kenya Schemes grapple with a high electricity bill, dilapidated infrastructure, high production cost, pests and diseases, climate change woes, and low productivity.

However, these challenges are expected to greatly reduce under the plan to switch irrigation to gravity-fed systems after the construction of the more than Sh20 billion Koru-Soin Dam is completed.



Rice field in K’Ochieng Irrigation Project

How lake-fed West Kano Irrigation scheme feeds Kenyans



By Rhoda Mbuvi

West Kano Irrigation Scheme is the only one in Kenya that abstracts its irrigation water from a lake — Lake Victoria — giving it a reliable supply. There are seven public schemes managed by the National Irrigation Authority and about 209 related projects across the 47 counties under the National Expanded Irrigation Programme.

Started in 1976, the Scheme is located in the Kano plains between the Nandi Hills escarpment and Nyabondo plateau on the shores of Lake Victoria and has 901 farmers with a gross gazetted area of 4,450 acres. The acreage under production is 2,230.
Its water abstraction is through a canal that drains excess water back into the lake by pumping.

The Authority is budgeting to procure a modern electric outlet pump this financial year, according to Mr. Joel Tanui, the Acting Deputy General Manager in charge of Operations and Irrigation Management Services. He says the pump will be more efficient, thereby opening up about 5,000 acres under irrigation at the scheme.

Mr Jared Odoyo, the Irrigation Water Users Association and Scheme chairman, West Kano was started in 1976 with 530 farmers, now getting to 1,000. “Farmers nurture rice as the first crop then upland crops to sustain the Scheme. In the current plan, we intend to do two crops, thanks to NIA support in terms of infrastructure maintenance, rehabilitation of the key items like the outlet and inlet pump, dyke rehabilitating, and paying electricity bills,” Mr Odoyo said.

“The economy here purely depends on rice farming under irrigation, which has enabled us to meet our family needs like taking our children to school, accessing health care and other social amenities”.
Mr Odoyo singles out ageing outlet pump as the elephant in the room. “At inception, the outlet pump could manage water, which is pumped within the Scheme, but it is ageing. I thank the NIA for the rehabilitation, which is costly. I request the Authority to procure for us a new outlet pump,” he said.

A delegation from the National Assembly and the NIA visited West Kano in June and promised to budget for a modern electric outlet pump in 2023/2024, he says. “I believe they will be able to follow this promise and deliver to enable us do the entire 2,230 acres in the Scheme annually, and hopefully do two seasons a year to enhance the sustainability of the Scheme



Rice field in West Kano Irrigation Scheme in Kisumu County

and more so contribute to the Kenya economy."

Rice is the major crop grown in the Scheme and Mr Odoyo, a rice farmer, lists West Kano milestones as the varieties planted, mechanised land preparation, chemical application and harvesting. "We have for quite some time embraced IR rice variety but now are introducing long grain variety, Basmati, and are adopting the Komboka. With the ready market locally and from Uganda, we are looking at the full rice value addition chain hence call on the government to supplement the current mill at Western Kenya Rice Mills which is overwhelmed".

Mr Hezron Onyango Okech, a horticultural farmer, plans to have two acres under kales and traditional vegetables such as managu, which is locally known as 'Osuga' and the other two acres under watermelon.

"There is a ready market for these horticultural crops which also have high value and are profitable. I harvest kales weekly for two months, earning averagely Kshs10,000 weekly. The proceeds from kales and other crops comfortably keep my four children in high school and have my family expenses catered for in full. Farming has always sorted these. It is very helpful," he said.

Mr. Laban Ogwaro, the officer-in-charge of the Scheme, says in 2022/2023 the Scheme put 2,083 acres under rice and 146 under the res, including green grams (50 acres), cabbages in 20, watermelon 10, maize 30 and tomatoes 36). Averagely, an acre under rice produces 35 bags of 90kg giving average KSh6,561,450.

At KSh.55 a kilo, farmers earn Ksh360, 879,750 while income from the 146 areas is approximately KSh18, 790, 000.00.

Persistent floods and birds menace are some of the challenges keeping West Kano farmers awake. "During the fourth quarter of 2021/2022, the Scheme suffered massive losses. Many farmers, especially in Block E1 and E2, abandoned their rice fields due to increased bird population. Block E1 and E2 abandoned 23 and 13 acres respectively, denying them a combined 97,200kg of produce and Ksh4, 374,000 in income.

"Other challenges include poor irrigation infrastructure, for example check-gates and feeder roads, siltation of canals, especially in South West Kano Scheme, submergence of 13 percent production area that has led to a decrease in production and low remittance of Operation and Maintenance fee leading to slow implementation of cropping," the officer said.



West Kano Irrigation Scheme intake in Kisumu County

The major rice varieties grown are IR-2793-80-01, covering almost 65 percent of the Scheme; ITA 310; Basmati-370; AT- 058; and, Super IR from Uganda.

Mr. Ogwaro attributes growth and resilience of West Kano to collaboration in areas such as implementing cropping and capacity building. Some of the collaborators are Kilimo Trust that promotes vermiculture/ compost, introduced soya beans and Yara that introduced an improved fertiliser. Others are Agrized Machineries, Lilimol, CarDPERP, Alluvial Limited, Safaricom (Digifarm) and Afritech.

PICTORIAL







1. His Excellency Hon. William Samoei Ruto, PhD., C.G.H President of the Republic of Kenya and Commander-in-Chief of the Defence Forces commissioning Kiirua Buuri Irrigation Development Project in Buuri Constituency of Meru County on April 22, 2023.

2. Former Principal Secretary Mr. Gitonga Mugambi EBS (Right) handing over office to incoming Principal Secretary, State Department for Irrigation Mr. Ephantus Kimotho Kimani (Left) on May 18, 2023 in prescence of Cabinet Secretary Ministry of Water, Sanitation and Irrigation Hon. Alice Wahome at Maji House Nairobi.

3. PS State Department for Irrigation, Mr. Ephantus Kimotho Kimani having a chat with National Irrigation Authority (NIA) during a courtesy call he paid to the Authority on June 26, 2023.

PICTORIAL









4. The inauguration of Eng. Gilbert Maluki into office as the Chairman of NIA Board in a ceremony presided over by a Commissioner of Oaths at NIA Head Office on May 23, 2023.

5. National Irrigation Authority former Chairman Hon. Eng. Joshua Toro, (2nd Right) Ag.CEO Eng. Charles Muasya (Right), Irrigation Secretary Mr. Aboud Moeva (2nd Left) and Head of Monitoring and Evaluation Ms. Jullyane Okello (Left) with a trophy for the excellent performance in the 2021/2022 Performance Contract presided over by His Excellency Hon. William Samoei Ruto, PhD., C.G.H President of the Republic of Kenya and Commander-in-Chief of the Defence Forces.

6. The Authority's Ag. Chief Executive Officer Eng. Charles Muasya(2nd Right), Agriculture CS Hon. Mithika Linturi (Left), Water and Sanitation PS. Dr. Ronoh (3rd Right) in the GRANOT avacado packaging plant in Netanya, Israel. The firm has acquired and is currently developing a 1,000 acre avacado farm in Naivasha, Kenya.

7. Ag. Deputy General Manager, Operations Mr. Joel Tanui (in a blue shirt), Member of Parliament, Bura Constituency, Hon. Kuno Yakub Adow (center) Tana River County Women Representative Hon. Abdullahi Amina Dika and former Tana Irrigation Scheme manager Mr. Kirimi Kirigia (Right) during a visit to irrigation projects in Tana River County on May 25, and 26, 2023 to inspect the ongoing cropping activities.

Staff News

Congratulations to Dorca Masita, Zipporah Kibuchi and Zeinub Mohammed for the blessings of your baby boys and James Kimaru for the blessing of a baby girl.

"A new baby is like the beginning of all things; wonder, hope, a dream of possibilities." - Eda J. Le Shan

GONE TOO SOON



Lilian Ngama

20.01.1979 - 04.07.2023

You have fought a good fight, you have finished the race, you have kept the faith and the victory in yours. Sing with the angels, worshiping the lord at his feet and may your warm smile add radiance in the heavens. cormfort and peace to them you leave behind Lilian.

To every NIA family member who has lost a loved one, take solace in the lord who loves, understands and takes care of us. May the departed continue resting in eternal peace.

How Ahero Irrigation Research Station keeps rice farming sustainable



Rice trials in Ahero Irrigation Scheme in Kisumu County



By Brendah Rajwayi

Two years after the Ahero Irrigation Scheme was piloted in 1966, the Government through the National Irrigation Board (now Authority) established the Ahero Irrigation Research Station (AIRS). It would gather data to explore the irrigation potential of the Kano Plains.

It was made possible with assistance from the Government of the Netherlands and by ILACO Euro consult BV until 1977. Subsequently, co-operation between the NIA and the Dutch Government continued through the Directorate for Technical Aid of the Ministry of Foreign Affairs (DTH) that provided technical experts, vehicles, office and laboratory equipment, and training for local staff, among others.

The station's initial focus was on identifying suitable crops and varieties, conducting fertiliser, tillage, herbicide, planting dates, irrigation, crop protection, and mechanisation trials. Rice and sugarcane were initially identified as the most suitable crops, with additional testing on cotton, maize, sunflower, soybeans, groundnuts, sesame, castor seeds, and other pulses.

Eventually, rice was selected as the main crop for the Scheme, while sugarcane was considered a secondary crop. However, due to marketing constraints, sugarcane production was abandoned.

The AIRS remains the primary irrigation research centre in Western Kenya, with a mandate to oversee all NIA projects in the region, including the Western Kenya Schemes, Perkerra, Turkana projects, and the new projects in Lower Sio and Lower Kuja rivers.

Its data have aided the growth of irrigation within the region, pushing the initial 530 acres under Ahero to 13,000 today with another 2,230 acres in West Kano and 4,500 in South West Kano.

AIRS works closely with farmers to evaluate techniques, products, or equipment to determine their impact on crop yield, soil health, water usage, and overall farm productivity. Their research and testing help farmers make informed decisions about adopting new practices or technologies to optimise their agricultural

operations.

One of the major tests that AIRS conducts is soil testing, helping farmers to know the level of acidity and nutritional value. This information is critical to informing the type of crop that can give optimal yields as well as the farm inputs, mainly fertiliser.

"We test different fertilisers and compute their data to evaluate their effects on not only the crop but the soil as well," says Ms Charlotte Ooro, the Officer-in-Charge at AIRS. Evergrow organic fertiliser is one of those tested and introduced to the farmers through AIRS in 2021.

"I learnt about Evergrow through a sensitisation held during a farmers' meeting here at Ahero Irrigation Scheme," says Zephania Omala, a farmer in Block M, and the vice-chairperson of Ahero Multipurpose Co-operative. Following the introduction of this fertiliser, he says his yields have grown gradually from an average 36 to 57 of the 90kg bags per acre.

"

Ms Charlotte Ooro,
the Officer-in-Charge at AIRS

We test different fertilisers and compute their data to evaluate their effects on not only the crop but the soil as well

"From the trials we carried out before recommending it to farmers, we noticed that the fertiliser progressively turned the soil darker and richer in nutrients. This explains the progressive increase in yields farmers using Evergrow organic fertiliser are experiencing," Ms Ooro says.

AIRS has also conducted several mechanisation trials to establish suitability. "Currently, we are assimilating farmers with the use of rice transplanters and mechanical weeders," she says, adding that it is important that farmers embrace mechanisation to reduce labour and labour costs, increase crop growth uniformity, and increase yields through the reduction of post-harvest losses.

Through collaborations with KALRO and CABI, plant clinics were established at Ahero Irrigation Scheme and West Kano Irrigation Scheme in 2018 through a Plantwise training programme. This collaboration has yielded to the training of five National Irrigation Authority staff in areas such as field diagnosis, plant health, identification of plant pests and diseases, and rice nutrient deficiency.

The 10 plant clinics set up in both Ahero and West Kano have been instrumental in managing Rice Yellow Mottle Virus (RYMV), one of the most stubborn diseases commonly affecting the Sindano rice variety in Western Kenya Schemes.

The disease was first reported in Western Kenya in 1966 and has been reported in most rice-growing regions in East Africa. The clinics have played a critical role in reducing crop loss that is critical to increasing agricultural productivity and essential to achieving the sustainable development goal of zero hunger and no poverty and the Government's Plan on food security.

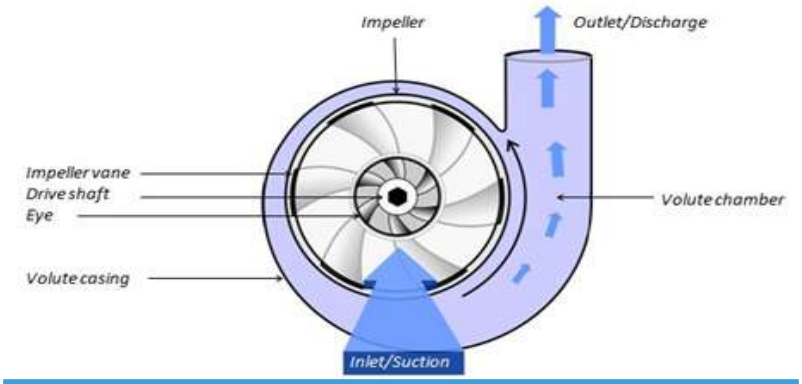
AIRS has tested the performance of different rice varieties in Western Kenya Irrigation Schemes and is now sensitising farmers on the Komboka rice variety that yields 40-45 90kg bags. Farmers, particularly in Okana Irrigation Scheme, an expansion of Ahero, are actively growing this variety.

The research station is a hub of agricultural research, innovation, and knowledge transfer whose activities contribute to sustainable agriculture, improve livelihoods, and the overall success of irrigation which is in line with the Bottom-up Economic Transformation Agenda (BeTA).

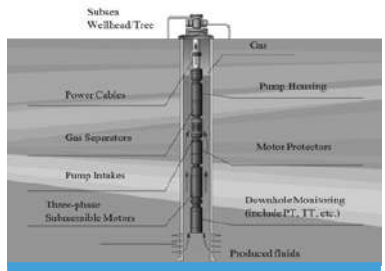
Pumping Systems used in Irrigation



By Grace Musila



Centrifugal pump



Submersible pump



Floating pump

According to Mr. Charles Wanjala, the Manager of Tana Irrigation Scheme, an irrigation pumping system is an arrangement that delivers water from a lower altitude to provide gravitational flow to an irrigation project. In Ahero Irrigation Scheme, the pump for instance is used to create head or to elevate water from river bed (lower elevation) to an open earth canal (high elevation) which conveys water to the fields by gravity. There are two major types of pumping systems used in irrigation, namely surface and submersible pumping.

Surface pumping system uses surface water sources, such as rivers, lakes or canals to supply water while the submersible method is a water pump that is designed to be submerged mainly in boreholes.

Western Kenya Irrigation Schemes use surface pumping system. There are two types of surface pumping systems: centrifugal and floating pump. In a centrifugal pump, the impeller is rigidly attached to the pump shaft and rotates as a single unit whereas in a floating pump the impeller is not directly attached to the shaft. It is designed to float freely within the pump casing. Large-scale irrigation systems frequently employ surface pumping because they are effective in applications requiring high flow rates.

In Ahero Irrigation Scheme, water is extracted via centrifugal pumping and distributed to the farmlands via a system of canals. The centrifugal pumping system at the Scheme depends on River Nyando as the main source of water. The surface pumping system in Ahero Irrigation Scheme includes control panels that regulate power and the pump.
West Kano on the other hand uses both centrifugal and floating pumping systems. Water is pumped from Lake Victoria into the Scheme through the floating pump system and abstracted from the Scheme back to the lake through centrifugal pumping.

"The Authority plans to install a new modern electric pump in the Scheme to maximise pumping efficiency and expand more land for irrigation in the 5,000-acre Scheme to boost rice production," says Mr. Joel Tanui, the Deputy General Manager in charge of Operations at the Authority.
The Authority is committed to addressing food security by providing and co-ordinating sustainable development and management of irrigation services in Kenya.

Controlling snail menace in Mwea's rice fields



By Vincent Kipng'etich



A newly transplanted paddy field in Mwea destroyed by the pest

Kirinyaga County is the main producer of aromatic rice in Kenya. The expansive irrigation Scheme produces more than 114,000 metric tonnes of paddy rice annually valued at about KSh 9.7 billion.

The rice value chain supports additional income generating activities such as hay balling, public and private millers and labour provision. The cropping cycle in the main season as well as during a subsequent crop are worth embracing. However, one of the adversities that are plaguing the scheme is the reported case of snail pest that feeds on young tender rice.

The invasive golden apple snail (*Pomacea canaliculate*) was first spotted in the rice Scheme in February 2020. Early response ensured the menace was managed in good time. Golden apple snails are among the top 100 most invasive crop species in the world.

However, the first task to do towards managing these young rice-eating species of snails is to perform a confirmation test through collection of egg and adult sample collection for morphological and molecular identification.

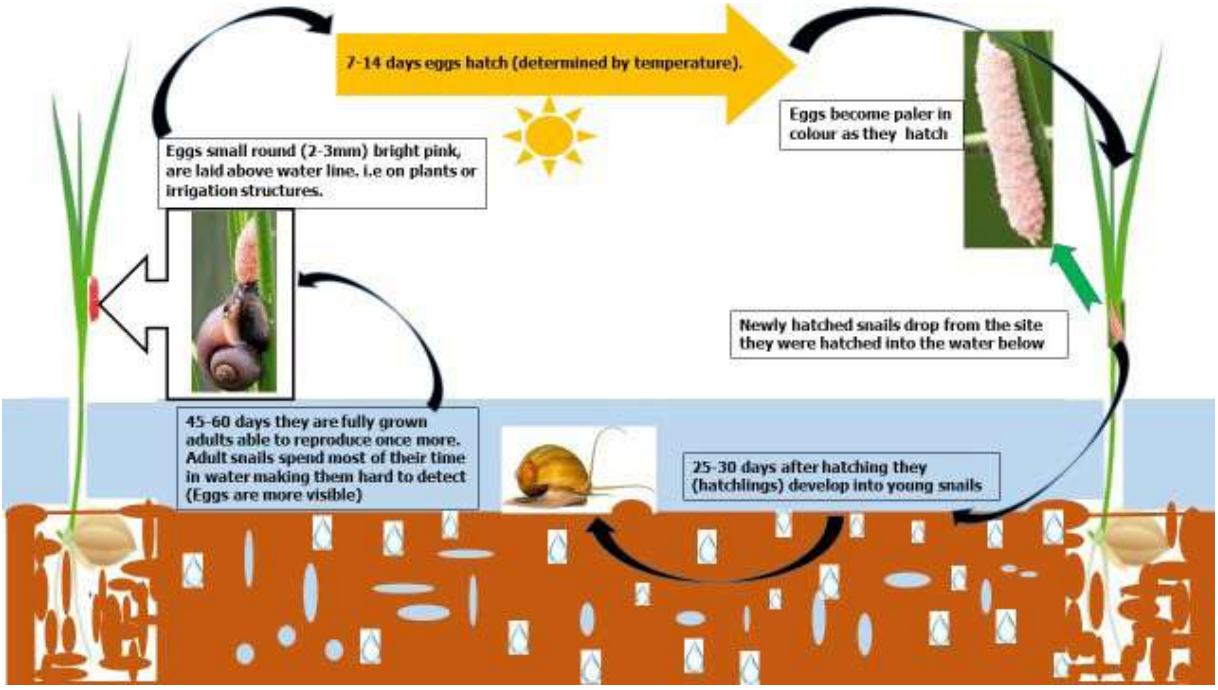
The Centre for Agriculture and Bioscience International (CABI) came through to help by determining their true identity in Mwea. Since then, the pest has spread throughout the Scheme, largely through the irrigation canals that spread the eggs and young snails and transportation through mechanical equipment.

This work confirmed the identity of the snails as *Pomacea canaliculata*, widely considered to be one of the most invasive invertebrates of waterways and irrigation systems worldwide. It also shed light on the fact that it will be the first recorded case of *P. canaliculata* in Kenya.

The invasive apple snails cause economic damage to young transplanted rice crop. They eat the stems and leaves especially on young tender seedlings up to 30 days after transplanting. This may cause a huge loss if not managed, sometimes causing 100 percent loss, forcing farmers to repeat transplanting three to four times per cropping cycle. This pest can cause such tremendous damage due to:

i Rapid development, high survival rate, and enormous reproductive capacity (laying up to 550 eggs every 3-4 months).

ii Favourable environmental conditions, especially in the tropics, the fact that they require moist areas to thrive. Rice is grown in paddy fields providing a conducive ecology to



Life cycle representation of invasive golden snail

spread. Availability and abundance of host plants including arrow roots, papyrus, grass, and host weeds.

iii Absence of effective natural enemies in introduced ranges

iv Porous borders, illegal trade and weak domestic quarantine measures.

v Climate change.

To effectively manage this pest, the following practises have been documented:

Golden apple snail management practises

Current management practises: a three pronged management strategy, including the following:

1.Prevention;

i. Transplant 21 day-old healthy seedlings to reduce window of destructive phase

ii Prevent snails from entering field by sieving irrigation water using 5mm mesh screens

iii Clean farm implements after use to avoid transporting to neighbouring fields.

iv Where possible transplant rice seedlings instead of direct seeding

v. Practise crop rotation or allow fallow

vi periods in an infested field by planting a dryland crop

2. Monitoring:

i Keep a close check on newly established rice crop by visiting field daily

ii Observe any egg mass presence to determine presence and severity of the pests

iii If presence exceeds five snails per square metre, employ direct method management practice

3.Direct method:

i Practise alternate and wet drying irrigation and, where necessary, collect adult snails by hand into buckets and destroy them

ii Trap the snails using papaya, sweet potato and cassava leaves along irrigation water channels and paddy field as these plants attract adult snails.

iii Spray with a molluscicides as a last resort

Word Search

Try to locate the 7 rice varieties below:

X	A	S	I	N	D	A	N	O	S
I	V	Y	Q	C	M	J	U	Z	U
T	M	K	O	M	B	O	K	A	P
A	P	C	E	R	Q	T	W	G	E
M	I	T	A	V	L	I	F	Z	R
S	B	P	I	S	H	O	R	I	I
A	E	M	B	X	L	Q	P	D	R
B	I	B	I	R	I	Y	A	N	I

ANSWERS FOR THE PREVIOUS WORD PUZZLE

S	B	T	A	N	A	O	H	P	E	R	K	E	R	R	A
A	U	C	A	W	A	X	S	Z	G	F	U	O	Q	V	M
H	W	R	E	N	H	C	Y	L	D	B	U	R	A	O	Q
E	A	L	A	D	A	E	G	O	R	Y	Y	U	S	O	E
R	T	E	I	E	B	N	A	W	L	C	R	D	P	F	E
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R	P	D	I	B	Y	E	N	S	E	G	C	V	P	W	E
O	A	O	G	U	A	P	A	A	R	P	M	E	E	L	K
M	N	W	A	G	L	I	K	B	K	A	U	S	R	A	X
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S	Q	P	I	R	P	O	L	R	J	K	A	I	E	G	M
O	V	R	O	Y	E	T	A	K	A	I	N	O	R	R	W
M	I	L	N	O	L	F	L	N	N	K	A	T	R	A	E
E	J	O	S	F	A	K	U	M	H	E	W	O	A	I	A
W	E	S	T	K	A	N	O	E	Q	Y	T	V	Z	G	S

National Irrigation Authority

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Kennedy Ouma: My goal is making positive impact in society



Mr Kennedy Ouma, the Ag. Western Kenya Schemes' manager



By Brendah Rajwayi

Mr Kennedy Ouma, the Ag. Western Kenya Irrigation Schemes manager, has dedicated his life to revolutionising irrigated agriculture in Kenya. He holds a Bachelor of Science in Agriculture Education and Extension from Egerton University and boasts over 10 years in the field of agriculture. He has done various courses in irrigation, including Participatory Irrigation Management Systems and Project Planning and Management.

The Irrigation News interviewed him for this edition. Excerpts.

> "
>
> Mr Kennedy Ouma
>
> *My driving force stems from a deep desire to create a positive impact in people's lives. I firmly believe that increasing the acreage under irrigation in the Ahero Irrigation Scheme to 20,000 acres and promoting crop intensification will not only uplift farmers' livelihoods but also contribute to the nation's food security.*

Tell us a bit about your background and early life.

I was born on November 9, 1984 in Busia, Kenya. I grew up in a family of 10, being the youngest of seven boys and three girls. My father is a retired senior researcher at Kenya Seed Company Limited while my mother was a homemaker. Upon his early retirement, caused by an accident that left him with

injuries that could not allow him to juggle life and work, my father resorted to farming to keep his family afloat.

Could you share your academic journey?

I completed my primary education at Ikonzo Primary School before progressing to Buhalarire Boys Secondary School for my high school studies. I then concluded my secondary education at Moody Awori Secondary School. I pursued a Bachelor of Science degree in Agriculture Education and Extension at Egerton University. Later on, I furthered my studies with a Bachelor's degree in Project Planning and Management from the University of Nairobi, Kisumu Campus, and took a six-month course in Participatory Irrigation Management Systems organised by JICA in Japan. Currently, I am pursuing my Master's degree in the same field at the University of Nairobi.

Having studied in Kenya, Japan, and China, is there anything you would like the education system in Kenya to borrow?

Certainly. Practice-oriented education. My training in Japan exposed me to a more hands-on approach, which I believe is crucial to preparing students for the real-world challenges in the workforce.

Any highlights during your school life?

Meeting my wife would have to be it. It is still vivid, however crazy how we met. We were all First Years in Egerton University. While in a church service, I remember the pastor instructing the congregants, "Geuka, salimia jirani yako. (Turn, say hi to your neighbour)." Susan Njuguna, currently my wife, happened to be that jirani. We continued conversing after the service and this would later culminate into a relationship that led us into marriage. Together, we have two children, a 10-year-old boy and two-year-old girl residing in Nakuru. Marrying her is also the biggest highlight of my life.



Aerial view of rice fields in Ahero Irrigation Scheme

Any low moments?

Yes. Losing my brother George Ouma to cancer. It left a vacuum that may never be filled. George loved playing the guitar, hence our shared passion for playing the guitar keeps me connected to him to this day.

How did your career in agriculture start?

Following my studies, I began my career with World Vision, where I worked on an agricultural project focusing on community mobilisation and data collection. This experience shaped my understanding of the challenges faced by farmers and deepened my passion for making a positive impact in their lives. Subsequently, I interned at the Ahero Irrigation Scheme in 2011, gaining practical insights into irrigation management. This internship led me to the West Kano Irrigation Scheme, where I served as a research assistant.

Tell us more about your roles and responsibilities at the West Kano Irrigation Scheme.

At the West Kano Irrigation Scheme, one of my key responsibilities was co-ordinating farmers to bring the scheme under crop. I worked diligently to ensure effective collaboration and participation from all stakeholders. In 2012, I was appointed as a research assistant, and later in 2015, I assumed the role of Ag. Officer-in-Charge. These experiences allowed me to deepen my knowledge of irrigation management and the

challenges faced by farmers.

Any notable achievements?

Certainly. One of my key achievements was spearheading the adoption of the System of Rice Intensification (SRI) in the West Kano Irrigation Scheme. Through farmer sensitisation and extensive outreach efforts, we achieved an astounding 90 percent adoption rate of SRI practices. This transformative change propelled the scheme from zero production to 95 percent crop production in the first cropping season. We then achieved 100 percent crop production in the second season and a remarkable 140 percent in subsequent season through crop intensification.

Moreover, my recent appointment as the Manager of the Lower Kuja Irrigation Scheme where I was working before being transferred to Ahero presented an opportunity to make a significant impact. Within a short period, we managed to motivate farmers to resume farming, bringing 1,500 acres of land under cultivation. Additionally, we established strategic partnerships with private stakeholders who leased lands from the farmers and paid operation and maintenance fees. This collaboration boosted productivity and created a sustainable model for the scheme.

What drives you to make a difference in the lives of farmers?

My driving force stems from a deep desire to create a positive impact in people's lives. I firmly believe that increasing the acreage under irrigation in the Ahero Irrigation Scheme to 20,000 acres and promoting crop intensification will not only uplift farmers' livelihoods but also contribute to the nation's food security. The potential for transformative change within the agricultural sector drives me to strive for excellence and inspire others to do the same.

What does your normal day as scheme manager look like?

More often than not, I begin my day by offering a prayer after waking up at 4:30am. Following that, I engage in a morning jog, refresh myself, and then dedicate my time to working on my school assignments. Once completed, I carefully outline my to-do list, taking into consideration the tasks that need my attention. By 7am, I am already at the office, fully prepared to tackle the items on my to-do list, which often involve meeting with stakeholders and conducting visits to the rice fields for progress monitoring and meaningful interactions with the farmers.

Apart from your professional endeavours, do you have any personal experiences or hobbies that have shaped you as an individual?

Absolutely. Before I embarked on my university studies, I ran a bodaboda business to earn pocket money. This experience instilled in me the importance of entrepreneurship and resourcefulness. Furthermore, during my childhood, I would create 'wire-cars' and sell them for KSh5 to buy mandazis. These experiences fostered my entrepreneurial spirit. Currently, I am a dairy farmer who not only rears cattle but also grows their food.

Sounds fascinating. What is your advice to young individuals who aspire to make a difference?

My advice to young people is threefold: Believe in yourself, work hard, and respect others. Having a passion for what you do will drive you to learn and grow, leading to success. Remember to remain humble and open to learning from others, as mentorship and guidance can shape your path towards achieving greatness.

Speaking of mentorship and guidance, are you a product of the same?

Definitely. I express my gratitude to Mr. Joel Tanui and Eng. Laban Kiplagat for their unwavering mentorship and guidance throughout my career. Mr. Gitonga Mugambi, EBS, (the former NIA chief executive) and Ms Victoria Aloo for believing in my capabilities and putting me in spaces where my talent for mobilisation has played a critical role. They have played instrumental roles in my personal and professional growth.

A mantra, or closing remarks?

Believe in yourself.



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