



Beans : research and production in DRC

Gilbert KABANDA promises
to build a
Public Center of Radiotherapy

World Science Day
on November 10, 2023
UNESCO calls for greater
trust in science



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Gilbert KABANDA promises to build a public Center for Radiotherapy

"In the days to come, Kinshasa will see the construction of a public radiotherapy center rise from the ground", announced Gilbert KABANDA, Minister of Scientific Research and Technological Innovation, on Tuesday October 24, 2023 at the Pullman Hotel in Kinshasa, during a working session with Professor Shaukat Abdul Razak, Head of the Africa Division of the Technical Cooperation Department of the International Atomic Energy Agency (IAEA).

According to RSIT Minister Gilbert KABANDA, Kinshasa will soon be home to a public radiotherapy center, as one of the outcomes of his trip. To this end, the Inspired Hill has been chosen as the site to house this hospital structure for the implementation of this high-caliber technology, which will be the pride not only of the DRC, but of Africa as a whole.

This justifies the presence in the Congolese capital of a delegation from this UN specialized agency, led by the Head of the Africa Division of the Technical Cooperation Department, at the invitation of Minister KABANDA, on behalf of the Government.

The delegation held talks with Minister KABANDA at the Pullman Hotel on the morning of Tuesday, October 24, 2023.

Minister KABANDA thanked his hosts for this first visit to the DRC, and expressed his pride in the IAEA's technical support for the development of nuclear science and technology in the DRC.

For his part, the Head of the Africa Division of the IAEA's Department of Technical Cooperation, Professor Shaukat Abdul Razak, expressed his delight at having seen with his own eyes the significant progress made on the UNIKIN site towards the realization of this project.

He also noted that the visit provided an



SRTI Minister Gilbert KABANDA talking to the Head of the Africa Division of the Technical Cooperation Department, Professor Shaukat Abdul Razak

opportunity to discuss all points relating to cooperation between the DRC and the IAEA, particularly the setting up of the Public Center for Radiotherapy, to organize training courses for a number of African countries in the fields of science, nuclear technology and academic programs, and to expand the AEC's action programs.

This was followed by an exchange of gifts between the two personalities. The DRC has been a member of the IAEA

since 1961, and benefits from several projects with this institution as part of the technical cooperation it maintains with its members.

Freddy IPUKA, Christian MAZONO, Consort BELESI and the Minister's communication unit RSTI

Using an Android cell phone at the ear for more than 20 minutes a day: a pernicious practice

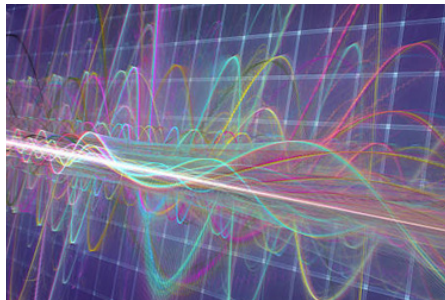
Today, cell phones are used by 94% of the world's population, with Android being the most widespread operating system. On average, we spend almost 5 hours a day in front of our phones, and 46 minutes making calls.

Several studies carried out in different parts of the world agree that anyone who spends more than 20 minutes a day with their cell phone glued to their ear runs a 60% risk of developing a brain tumor. That's why oncologists advise people not to use their mobile phone for more than 20 minutes a day. If you must, it's better to do it in 6-minute increments rather than all at once.

After a long conversation, the phone heats up in your ear. Cell phones release electromagnetic waves that look a little like radio and TV waves, but are more significant, ranging from 700 to 900 megahertz, or even 1,800 or 2,600

megahertz for future uses such as 5G. These frequencies are far higher than those of radio waves, which oscillate around 100 megahertz, or television (200-800 megahertz). Waves are made up of an electric field and a magnetic field with the same sinusoidal period. They are very short waves of energy that travel at a very high speed, close to that of light, i.e. 300,000 km/s.

Studies in the laboratory and on open sites have shown that at this level of speed, for a period of 20 minutes, the consequences for the nervous system are certain. Children whose nervous systems are not yet fully developed are more susceptible. Use for 20 minutes increases the temperature of the cerebral cortex by 10 Celsius, and this tempera-



ture can rise to 20 C if used for up to 40 minutes.

This means using the "hands-free" option, or communicating through the left ear, which is more resistant than the right. Similarly, because of cardiac activity, it's forbidden to put your phone in your left shirt pocket. Anyone wearing a heart pacemaker near a phone, for example,

will cause the cardiac device to malfunction. It is therefore advisable to place your phone at the foot of the bed and not above your head during sleep, because of its effect on the brain during sleep.

Phones also increase levels of the stress hormone cortisol, which can contribute to all the health consequences of stress, ultimately reducing life expectancy. And what about headsets? Those who use headsets are more exposed to electromagnetic effects than those who use their phones by ear or hands-free.

Thermal effects linked to the heat released by telephones during prolonged communication are not uncommon. But there are also increasingly confirmed

non-thermal effects, biological effects on cells such as gene toxicity (genotoxicity), reduced immunity, and links with certain serious illnesses (cancers, childhood leukemia) or milder ones such as sleep disorders, migraines, fatigue, depression or difficulty concentrating. Trephoning may also be associated with learning and cognitive performance problems, not to mention distraction and dependence (addiction).

Finally, we advise you not to keep your mobile phone in a pocket close to your genital area, as the electromagnetic waves emitted by cell phones affect sperm quality, reducing their mobility and viability in men.



Une dame utilisant un téléphone pendant plus de 30 minutes

Is the warning very pessimistic? Remember the history of asbestos and tobacco, which were long considered harmless but are now recognized as major, frightening killers.

No one would want to repeat a mistake of the past. On the contrary, we'd all like to learn from them. There's no doubt that Dr. Martin Cooper, Motorola's famous head of research and development, considered to be the inventor of the telephone in 1973, had no idea of the harmful

effects of his invention.

It has many beneficial applications for our modern lives, such as connectivity, convenience, emergency use, and its utilities are constantly being added to day by day. However, the health hazards of the Android phone, which has become the close friend of many humans, are worth considering. Until science equips us with more health-friendly means of communication, let's use our phones with greater caution. Next St. Gaston's

Day, February 6, considered to be World No-Telephone Day, we'll be thinking more conscientiously and responsibly about this 'necessary evil'.

Jean-Luc Balogije Selenge RCMD/Bunia



NIASR

Minister Gilbert KABANDA launches the PADCA-6P proj-

On September 12, 2023, the Minister of Scientific Research and Technological Innovation, Gilbert KABANDA, launched the activities of the African Development Bank's (ADB) Agricultural Value Chain Development Support Project in six DRC provinces (AVCDSP-6P) for the National Institute for Agronomic Study and Research (NIASR) at the Immeuble Kasai.



A new era is dawning for Congolese agriculture and food. Indeed, the stakes are high when it comes to the challenge of meeting the performance requirements of modernity in this imminent economic, commercial and social sector of national life. As organizer of the event, NIASR has decided to shake things up in this country, from production to consumption. Experts in the field are putting their heads between their two hands to reflect on this in a training and capacity-building workshop.

The head of RSIT himself took to the stage to inaugurate the work.

Dr Gilbert KABANDA is rubbing his hands together, since in his own words, this think-tank comes at just the right time, just after the Conclave of Congolese Scientific Genius.

A happy coincidence in the implementation of the resolutions taken by researchers, innovators and inventors at the end of this historic Conclave, which kept all its promises and augurs a better tomorrow for the country's all-round development.

In any case, according to Minister KABANDA, three food products are being targeted: rice, maize and cassava. These are the staple foods of the Congolese people, from one end to the other, and they are based on improved seeds.

According to Minister KABANDA, this workshop is the foundation for the development of a reliable seed system for the production and supply of quality seeds.

For him, this project will enable farmers to increase their productivity and curb the food and nutrition crisis in the DRC.

With this in mind, the Minister solemnly pledged to NIASR officials that Congolese agricultural potential should no longer be a mere slogan, but a living, palpable, tangible reality. Fingers crossed with

this statesman who is not in the habit of talking in the air.

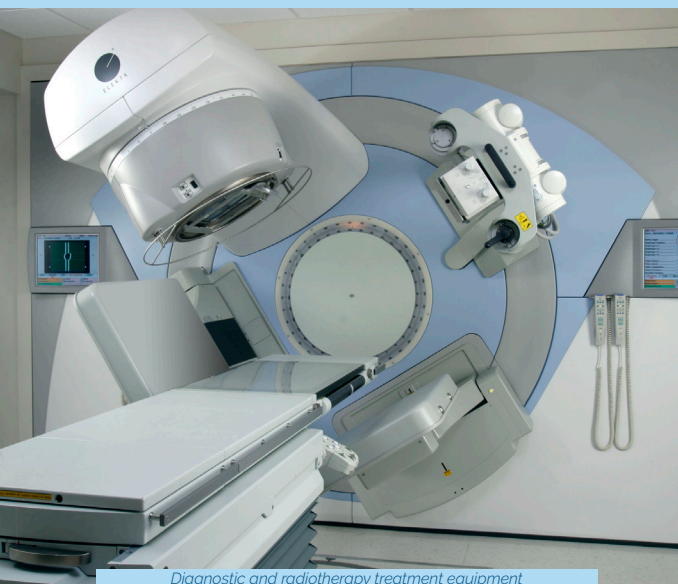
SRTI Minister's communication unit

Gilbert KABANDA: The DRC will be equipped with diagnostic and radiotherapy treatment facilities.

"There's no doubt about it. The DRC will soon be equipped with a large batch of diagnostic and radiotherapy treatment equipment", Gilbert KABANDA, Minister of Scientific Research and Technological Innovation, told the national press in Kinshasa after taking part in a meeting of the General Assembly of the International Atomic Energy Agency to come.



Minister of Scientific Research and Technological Innovation Gilbert KABANDA



Diagnostic and radiotherapy treatment equipment

Some forty countries took part in the meeting. Minister Gilbert KABANDA's participation in the General Assembly of the International Atomic Energy Agency (IAEA) last September was particularly noteworthy for its repercussions. Indeed, following the contacts he initiated with this UN specialized agency, the Minister obtained that our country will be provided with diagnostic and radiotherapeutic treatment equipment, a

major acquisition within the framework of DRC-IAEA technical cooperation.

With this in mind, and in the spirit of the Minister, the acquisition of these instruments of high scientific scope, he, Dr Gilbert KABANDA, a researcher at once, who never ceases to repeat that scientific research, as is the case in the world's great powers, will be the bedrock or foundation of the DRC's development.

And, according to Minister KABANDA, it's a source of great pride for the Congo, whose subsoil is already brimming with the enormous potential of mineral resources such as uranium and others. And according to Minister KABANDA's profession of faith, the Congo, recently rejuvenated by the results of the recent Conclave of Congolese Scientific Genius, should be impacted in sectors such as the economy, the social sphere and even in its multifaceted culture, including security and military armed

deterrence, of which the Congolese should be the first beneficiaries.

Not only that, but in the wake of the Minister's announcements to the national press, the General Director of the International Atomic Energy Agency will be making an official visit to Kinshasa in the next few days, the first time such a high-profile figure has set foot on Congolese soil.

And for the Minister, the government will take all the necessary steps to give this distinguished guest a welcome worthy of his rank. As part of his trip to Europe and Asia, Minister Gilbert KABANDA also took part in an international meeting organized by his Japanese counterpart in Kyoto, Japan. During this meeting, the Patron of Scientific Research made the voice of the DRC heard from the rostrum in terms of the development of research and innovation.

SRTI Minister's communication unit

The AEC organizes a symposium to fight cancer

The French Atomic Energy Commission (AEC), organized a symposium in Kinshasa from October 2 to 4, 2023 under the theme: « AEC, spearheading the fight against cancer in the DRC? »

The aim of this activity was to improve and protect human health. It was opened by the Director of the Cabinet of the Minister for Scientific Research and Technological Innovation, Mr. Dieudonné CHIRISHUNGU CHIZA.

Several personalities took part in the ceremony. They included: the Secretary General for Scientific Research and Technological Innovation, the Director of the National Cancer Center, foreign experts, and representatives of various health organizations in Kinshasa.

According to Professor Steve MUANZA KAMUNGA, General Commissioner of the AEC, the aim of the symposium was to show that his institution, the AEC, represents

a potential in the fight against cancer in the DRC. He also thanked the participants present at the ceremony.

On the other hand, the Director of the National Center for the Fight against Cancer, Mr. Bienvenu LEBWAZE, welcomed the initiative taken by the AEC and affirmed that the DRC has already gained momentum in the fight against this pathology.

The symposium ended with a tour of the Nuclear Medicine facilities at the University Clinics.

Mélanie MWAMINI



family Photo.

[World Science Day on November 10, 2023](#)

UNESCO urges greater confidence in science



Celebrated every year on November 10, World Science Day for Peace and Development underlines the important role of science in society, and the need to involve the general public in debates on emerging scientific issues. It also highlights the importance and relevance of science in our daily lives.

By bringing science closer to society, World Science Day for Peace and Development aims to ensure that citizens are informed about scientific developments. It also serves to highlight the role played by scientists in broadening our understanding of the remarkable and fragile planet we inhabit, and in strengthening our societies.

For this year 2023, World Science Day is

celebrated under the theme: "Strengthening trust in science".

Science can only fully assume its role in shaping our collective future if it inspires confidence. Indeed, it is trust in science that fuels the development and application of evidence-based solutions to our world's multiple challenges. Trust in science is a complex issue. It indicates how scientists work, as well as how science is perceived by society. So building trust in science also strengthens science-based policy decisions and society's support for their application.

During this commemoration, a number of activities will be organized, including reflections aimed at exploring parameters that can help build and preserve trust in science.

These exchanges will relate to science, politics, society and the development of science-based policies, and to a better understanding of the state of scientific research.

They will also emphasize the importance of the freedom and security of scientists, as a key ingredient of scientific ecosystems driven by universal values, as well as the vital role of science popularization in building scientific culture, public awareness and trust in science.

The event will close with the award cer-

emony for the UNESCO KALINGA Prize for the Popularization of Science. The UNESCO KALINGA Prize for the Popularization of Science rewards outstanding individual contributions to communicating science to society and promoting the popularization of science.

In the Democratic Republic of Congo, the Ministry of Scientific Research and Innovation often organizes scientific activities such as scientific conferences, exhibitions of research work, etc. to mark this day.

MAZONO MPIA Christian, BELESI Consort/NSC

and UNESCO

CoE-CBRN/DRC organizes a workshop to update the NAP document

The Chemical, Biological, Radiological and Nuclear Center of Excellence, CBRNCE/DRC in collaboration with the Joint Research Centre of the European Commission, organized a workshop to update the National Action Plan (NAP) for the mitigation of chemical, biological, radiological and nuclear (CBRN) risks in the DRC from August 29 to 31, 2023 in the meeting room of the Sultani Hotel in Gombe township in Kinshasa, DRC.

The workshop, opened by the Director of Cabinet of the Minister of Scientific Research, provided the DRC with a draft National Action Plan (NAP) that takes into account new CBRN risk situations in the country after 2018. In fact, this is a revised planning document based on another one produced in 2018. The main observations retained in this draft NAP relate to :

- Les structures institutionnelles nationales actuelles impliquées dans
- Current national institutional structures involved in CBRN risk mitigation;
- DRC's participation in international CBRN instruments;
- Assessment of CBRN threats and risks;
- Analysis of current CBRN threat and risk mitigation capacities;
- Proposed steps for capacity building.

The meeting was attended by several experts from the CBRNCE/DRC National Experts Network and other personalities.



Family photo

The CBRNCE is responsible for CBRN risk mitigation in the DRC, and is headed by Prof. Odette KABENA, who closed the event

To the meeting Congolese Scientific Genius

This new section will focus on supporting Congolese inventors and innovators. STIB has decided to showcase our inventors and innovators who devote their time to finding ways and means of solving life's problems. We begin with : Ibrahimu ABEDI

Interview

Innovator Ibrahimu ABEDI presents his prototype <<solar-powered pondu machine>>

A In an interview conducted in Kinshasa, the « Sciences and Technologic Innovations Bulletin » spoke to the innovator of the prototype "school paving machine", Mr. Ibrahimu ABEDI, about this innovation.

Christian MAZONO: Would you like to introduce yourself to our readers?

Ibrahimu ABEDI : I'm Ibrahimu ABEDI, Innovator and in charge of the « solar egg-laying machine ». I currently live in Lubumbashi in the province of Haut Katanga.

CH.MAZ: What's a solar pellet machine?

IB. ABED : A solar pondu machine is a prototype that uses solar energy to plunder eggs. It solves a number of problems, including intensive power cuts and fuel consumption, etc.

CH.MAZ: Could you tell us how long it took to complete this project?

IB. ABED : The prototype was created in 2019. I carried out 5 years of research to complete this project.

CH.MAZ: What are your difficulties?

IB. ABED : There are a number of difficulties,

not least the lack of machinery..

CH.MAZ: What are your final words?

IB. ABED : I'd like to thank the Congolese government for organizing the Conclave of Congolese Scientific Genius. It enabled Congolese innovators and geniuses to showcase their talents and know-how. The Congolese authorities are called upon to support us in every way to ensure the success of this project.

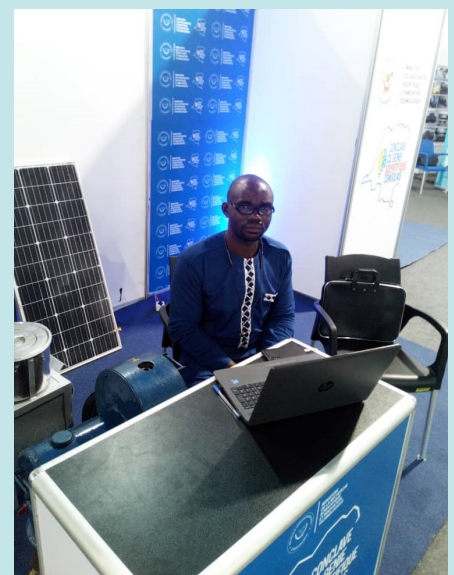
Congolese researchers and innovators also need to get together to combine their efforts. Bringing scientists and innovators together will enable us to better solve society's problems. Someone once said that natural resources are limited, but creativity is unlimited. It's important for our country to take care of its grey matter, as other nations have been able to develop thanks to it.

It's impossible to emerge from underdevelopment without science, technology, engineering and so on.

Ibrahimu ABEDI,

Innovator and Project Manager for the « solar pondu machine ».

Interview by **Christian MAZONO/CSN**





Beans: research and production in the DRC

The bean is both a food security crop (a major source of protein for the poorest members of the population, for whom animal protein is rarely available) and a source of income for most farmers in East, Southern and Central Africa.

It is experiencing a revival of interest and an improvement in consumption levels as an important source of protein for households in Africa, due to the scandalous rise in animal prices, and ranks second among staple foods in DR Congo, immediately after cassava, sweet potato and potato, which are substituted for each other at different altitudes.

Beans provide most of the protein in the diet.

In Katanga, beans account for 10% of cultivation in all the administrative entities, and are second only to groundnuts in terms of average legume production. Moba is the most productive entity, accounting for almost all provincial production; in South Katanga, the best yields are around 800 and 1000 kg/ha, and up to 2500 kg/ha with improved varieties. Beans are a very versatile crop in the sense that they can be adapted to almost any agricultural production system encountered in DR Congo.

Crop production over the last 10 years

The bean production curve in the DRC evolves linearly for 4 years until 2016, then increases exponentially for the last three years until 2019. From 2012 to 2022, DRC production continues to rise. Bean production between 247 and 265 thousand tons between 2012 and 2022.

The largest quantities are produced in the two Kivus, followed by Province Orientale, Bas Congo and finally Greater Katanga.

It requires capitalizing on the achievements of agronomic research to offer the population of the DRC the opportunity to

be a real human capital for the country's development. To this end, several technologies and technical itineraries have been developed, as well as bio fortified varieties, including those rich in Iron and Zinc (var: HM 21-7, NUA 45, NUA 35), those tolerant of low soil nitrogen levels known as Low N (var:), and those tolerant of water stress (var: K132; MAHARAGI SOJA) have been selected or developed by INERA researchers in collaboration with universities (UNIKIN and UNILU) and with the help of international partners (SABRN, PABRA AND CIAT).

Nutritional value

The common bean, thanks to the popularity could be a major source of income for an important source of income for farmers. In addition to its proteins (22%), lipids (1.6%) and carbohydrates

(57.8%) in the dry state, it could therefore find its place in our populations' fight against malnutrition and poverty.

This crop is grown all over in DR Congo, but the best yields are obtained in the country's higher altitudes of the country, mainly in Province Orientale

Oriental Province and Kivu in family plantations for household consumption. Beans are a highly plastic crop in the sense that it adapts to almost all agricultural production systems production systems encountered in DR Congo.

Recipes based on bio fortified crops (beans rich in iron and zinc) can provide part of the daily intake of bio fortified crops recommended in vitamins and minerals to help prevent and reduce micronutrient deficiencies. Disseminating

micronutrient-rich bio fortified processing to rural households helps to empower them and improve their nutrition in a sustainable way.

Constraints linked to production in the area

In most of Africa, small-scale farmers are the main bean producers. Practiced according to complex cropping systems involving the use of mixed cultivars.

It is generally a food crop in which fertilizers or pesticides are rarely used

Prioritization of bean production constraints identified in surveys

- Early onset of rains
- Dry spells set in during the rainy season
- Low soil fertility
- Insufficient seeds
- No mastery of the agricultural calendar
- Poor knowledge of bean seed conservation techniques
- Insufficient financial resources for seed production

Rainfall disturbances observed in recent years are the consequence of climate change and, together with low soil fertility, are the main constraints limiting bean productivity and production in the main production zones of Eastern, Central and Southern Africa. In most countries south of the Sahara, increasing demographic pressure has led to an intensification of farming practices and an extension of cultivated areas, resulting in a reduction

in fallow periods.

This situation not only predisposes the soil to erosion, but also leads to rapid depletion of its nutrients, notably nitrogen and phosphorus. Soil fertility is a key factor in crop productivity. The physical, chemical and biological properties of the soil, which in turn depend on the nature of the parent materials, and on the evolution of soil conservation and/or improvement management techniques, are the parameters that farmers should pay imperative attention to in order to improve and stabilize the yields and productivity of most crops. The use of mineral and organic soil improvers is a possible option for improving yield loss trends and thus food security.

A major problem for beans in Katanga was the unavailability of high-performance varieties. The results obtained with the D6 Kenya variety, introduced by PNE in 1987, compared with local varieties, the analysis of several years of trials and demonstrations shows that the N-P₂O₅-K₂O 18-46-30 dose increases bean yields by an average of 620 kg/ha, giving a productivity index of 6.6. Applying *Tithonia diversifolia* at a rate of 10 t ha⁻¹ per hectare can double bean yields.

The fertilizer doses and formulas currently popularized in the province were developed a few years ago by companies in other countries (Zambia, South Africa, Saudi Arabia etc.) and tested on their soil. In the meantime, there may have been changes in the chemical imbalances of mineral elements in the different types of cultivated soil, with new deficiencies appearing in the region, or existing ones being reinforced.

According to surveys carried out in the various territories of Katanga province, mineral fertilizers and pesticides are rarely used in bean cultivation. According to Maltas, easier access to synthetic fertilizers and farm specialization have led to a dramatic reduction in the use of farmyard manure on farms without livestock. However, the elimination of these organic inputs leads to significant reductions in soil organic matter (SOM) when no substitution measures are taken.

Different types of altherogenic factors in cultures

Plants are constantly under attack from weathering agents in their environment. These attacks take place both in the field (during vegetation) and in warehouses, after harvest. Some spoilage occurs during the transport of harvested produce from the field to the place of storage or sale.

There are 2 main groups of alterogenic factors:

- Abiotic or non-parasitic factors

These factors are non-infectious and non-transmissible from a damaged plant to a healthy one.

They are of 3 types :

a) climatic factors

These are generally thermal extremes (temperatures too low or too high); excess water (flooding and drought), meteorological conditions (winds, storms, hail, lightning).

b) edaphic factors

These soil-related factors are mainly deficiencies, excesses and ionic imbalances; pH.

c) pollution factors.

Pollution affects air, water and soil through the presence of SO₂, pesticides, chemical fertilizers and heavy metals.

• Biotic or parasitic factors

These are parasitic diseases and pests. Parasitic diseases are infectious and contagious. They are caused by: fungi, bacteria, viruses, mycoplasmas or phanerogams. Pests are animal species that cause damage to crops in the field, during transport or storage. They are also vectors of disease agents (viruses, mycoplasmas, bacteria and mushrooms).

In many places, these equally important pests cause crop yield losses. These include spider mites, nematodes, birds and rodents.

The main insect pests of beans in the field include *Oothea* sp (chrysomelidae) and a complex of beetles of the genus *Ooryna* (meloidae) and aphids (Aphis-fabae), flower thrips, *Mylabris*, pod-boring caterpillars and bruchids in storage. *Oothea* can be controlled when damage is severe by applying insecticides and respecting the sowing period.

Farmers use no inputs to amend or improve the soil, and no pesticides to combat pests and diseases, because they have no means of obtaining them and no knowledge of how to control them.

Ecological requirements

Heat requirements: germination between 10 and 40°, but optimum between 15 and 30°. These plants are sensitive to cold: they freeze at 0° and stop growing at around 5°. They are temperature-tolerant plants and can be grown in both hot and cold seasons, provided there is sufficient water in the soil.

Water requirements: Beans need 300 to 400 mm of water during the growing season. Rainfall must be regular, non-violent and well distributed. Excessive humidity is detrimental to the plant, causing widespread chlorosis, cryptogamic diseases and flower drop. A lack of water combined with excessive heat causes

flowers to wilt and drop.

Light requirements: Beans are light plants. Grown in the shade, it stretches out a lot and yields practically no crop.

Soil requirements: Beans prefer light, healthy soil. In compact soils, emergence is difficult, while in heavy soils, the seeds rot in the soil. Preferably choose loam or silico-clay soils. In calcareous soils, bean seeds cook poorly. In clay-rich soils, we recommend sowing beans on ridges to improve soil drainage. Beans are very tolerant of pH (6 to 7.5), but prefer slightly acidic soils (6.5).

Altitude requirements: The bean is indifferent to altitude: it grows just as well in the highlands as at sea level. In Madagascar, beans are found mainly in the highlands and on the southwest coast. Common bean (*Phaseolus vulgaris* L.) is a plastic legume, whose productivity in the Democratic Republic of Congo in general depends on certain edapho-climatic environmental conditions and the observance of certain cultivation techniques. However, altitudes of 1,000 to 2,300 m should be considered favorable, especially in the east of the country, where production is highest. Production at lower altitudes, particularly in the Lower Congo, takes place during the cooler periods of the dry season in the lowlands.

Beans are a species of annual plant in the Fabaceae family (Papilionaceae), of the genus *Phaseolus*, commonly grown as a vegetable. The fruit (the pod), the protein-rich seeds and the leaves are all consumed.

The term "bean" also refers to its consumed parts, the seeds (dried beans) or pods. This plant, native to Central and South America (Andes), plays an important role in the human diet as a source of starch, protein and biological nitrogen fixation.

In some parts of Africa and Latin America, it is grown as a food crop, while in developed countries, alongside limited production in family gardens, field cultivation has developed, producing either dry beans for canning, or green beans. Both dry and green beans can be either dwarf (the preferred form in field cultivation), or climbing, with the need for stakes. Bean plants are constantly under attack from environmental agents.

These attacks occur both in the field (during vegetation) and in warehouses, after harvest. Some damage occurs during transport of harvested produce from the field to storage or sales areas. Two methods of genetic improvement are used for beans: varietal selection and genealogical selection. Beans are grown in complex cropping systems, using mixtures of cultivars. It is generally a food

crop in which fertilizers or pesticides are rarely used.

The bean, native to Central and South America (Andes), plays an important role in human nutrition as a source of protein and in biological nitrogen fixation. Beans are grown in complex cropping systems involving the use of mixed cultivars. It is generally a food crop in which fertilizers or pesticides are rarely used by small farmers, unlike large-scale farmers.

IR. MAKI ILUNGA AND DR. MATONDO
NSEBUA KIESE/NIASR

Read for you

Eating chili helps you live longer



According to a study published in 2019, eating chili pepper increases life expectancy. Maybe it's time to spice things up a bit!

In addition to spicing up the dishes of its fans, chili has numerous health benefits. Rich in vitamins C, B6 and K, it is also a source of iron, copper and manganese. It promotes weight loss, improves digestion, protects the stomach lining... It also reduces the risk of cancer, diabetes and cardiovascular disease.

The list of its therapeutic properties is now growing thanks to a new study, published in the Journal of the American College of Cardiology in December 2019. Research has shown that regular consumption of this condiment reduces the risk of death from heart attack or stroke.

Chili eaters have a lower mortality risk than others

The study was carried out in the Molise

region of southern Italy, where chili is a common ingredient in dishes such as all'arrabbiata. The risk of death was studied in almost 23,000 participants, some of whom tasted the spicy red vegetable, others not. In all, the health and dietary habits of the participants were monitored for an average of eight years.

Volunteers who ate chilies at least four times a week were found to have a 23% lower risk of all-cause mortality than those who did not. The risk of death from heart attack was reduced by 40%. The risk of death from stroke was more than halved.

"An interesting fact is that the protection against mortality risk was independent of the type of diet followed," says Marialaura Bonaccio, lead author of the study and epidemiologist at the Mediterranean Institute of Neurobiology (MIN), in a press release. In other words, someone may follow a healthy Mediterranean diet, someone else may eat less healthily, but for all of them, chili has a protective effect."

A recent study by Portuguese researchers explains what happens inside our bodies if we drink one beer a day. The results are surprising.

If alcohol abuse is dangerous for your health, it would seem that drinking one beer a day is good for your body. As long as you limit yourself to just one beer, of course. As a reminder, beer is made by fermenting malted barley grains. It is the

Drinking beer every day: here's what goes through your body



most popular and widely consumed alcoholic beverage worldwide. Portuguese researchers have taken a closer look at this alcohol, to see what impact it has on our health. And surprising as it

may seem, beer actually has beneficial effects.

A study conducted by Portuguese researchers reveals that moderate beer consumption is beneficial for the intesti-

nal flora. In fact, drinking one beer a day helps develop the microbiota.

To reach this conclusion, researchers studied a sample of 22 healthy men. For four weeks, they drank 33 cl of beer a day. Half drank 5.2% alcoholic beer, the other half non-alcoholic beer.

to feminine

Behind the widespread consumption of petit cola lies an array of therapeutic virtues. This piece of fruit is recommended in cases of hypertension, colds, malaria, oral diseases, diabetes... Petit cola is proven effective against sexual impotence and premature ejaculation. It's an extraordinary aphrodisiac.

A treatment for more than 10 diseases

Chewed in its natural state or used as an input in the manufacture of certain medicines, petit cola cures or alleviates

Here are 7 good reasons to drink petit cola



the pain of people suffering from stomach sores, curable wounds, Buruli ulcer, blood diseases (sickle-cell anemia, diabetes, etc.). It is recommended for the management of cancer, hypertension, glaucoma, malaria, chest colds, opportunistic infections associated with HIV, oral diseases, osteoarthritis, etc.

Prevention of more than 10 diseases

In addition to its curative properties, this fruit has principles that can prevent the onset of a dozen or so of the diseases mentioned above. Regular consumption (no more than 2 nuts a day)

is beneficial for maintaining good health.

Petit cola refreshes breath

Petit cola has an effect on oral diseases. It also acts on the consumer's breath. Not only does it improve breath when tackling mouth diseases, it also works better than chewing gum. It has been shown to be effective against certain problems specific to women. These include ovarian cysts, fibroids, salpingitis or blocked fallopian tubes, all of which pose numerous reproductive problems, not to mention painful periods. Some even associate its benefits with miracles.

A true aphrodisiac

This piece of fruit is an extraordinary aphrodisiac. Affordable, petit cola boosts the libido. And best of all, it has no side effects on human health. Although it can have an effect on women, its effects are particularly spectacular on men's libido. The theobromine contained in this fruit provides significant benefits for men. It tones virility and restores vigor. It is highly recommended in cases of sex-

like coffee. Crunching a little cola is like drinking a cup of coffee. It's rich in theobromine and caffeine, 2 substances that boost alertness and physical stamina. So it's a good idea to use it when you're feeling tired.

Petit cola is an excellent painkiller

Regular consumption helps prevent or relieve back pain, nerve problems and dislocations. It also has beneficial effects on the immune system. Its powder mixed with shea butter is said to lengthen the sex and enlarge the breasts, not to mention treating dermatoses such as shingles. This mixture is also used to treat the fontanelles of newborn babies.

Danger warnings

However, pregnant women are advised not to consume them. This nut contains caffeine, which can have a negative effect on pregnancy and the baby. Women of childbearing age should not take 300 mg of caffeine a day. Garcinia Kola, known as "Bitter cola" in Cameroon, is a flowering plant in the Clusiaceae or Guttiferae family. The species is also found in Benin, the Democratic Republic of Congo, Guinea, Côte d'Ivoire, Gabon, Ghana, Liberia, Nigeria, Senegal, Sierra Leone, Togo and Gambia.

SneWeb

ual impotence, premature ejaculation, azoospermia and oligospermia. The list of virtues is far from exhaustive.

To lose weight

This fruit is an ideal appetite suppressant to curb appetite and prevent snacking between meals. It can therefore be used as part of a diet and/or sports program aimed at accelerating weight loss.

Facilitating management

It regulates the digestive system. It is also recommended in cases of diarrhea and indigestion. It acts as a tonic, rather



At the time for Innovation in the DRC

Heritier MBALA presents his prototype for automatic sales management system for petroleum products

The market for the sale of petroleum products in the Democratic Republic of Congo plays a crucial role in the national economy, given the country's heavy dependence on fossil fuels for its energy needs. Traditional service stations, though widespread, present constraints, including limited hours and manual payments.

The market for the sale of petroleum products in the Democratic Republic of Congo plays a crucial role in the national economy, given the country's heavy dependence on fossil fuels for its energy needs. Traditional service stations, though widespread, present constraints, including limited hours and manual payments.

However, an innovative solution is emerging. Innovator Héritier MBALA has designed an automated petroleum product sales management system for commercial enterprises. The system integrates electronic payment terminals (EPTs), helping customers to pay for their fuel purchases automatically, anywhere and

at any time. It also offers payment options via credit cards, debit cards and mobile applications.

When a payment is successfully made, the system triggers the corresponding pump to dispense the amount of fuel requested by the customer. In addition, the system comprises a set of essential functionalities, including a data recording system for billing and inventory tracking, a user-operated dispensing nozzle, a control box for fuel type selection, a fuel hose connecting the pump to the vehicle, a measurement system for quantifying dispensing, a price display, and a storage tank.

This revolution in the Congolese oil sector promises to make life easier

for consumers, improve business efficiency and contribute to the country's modernization. An image of an automated service station with a customer making an electronic payment illustrates this major innovation.

BELESI Consort and MAZONO Christian/NSC

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Kinshasa: NSC organizes its 50th ordinary session

The National Scientific Council (NSC) organized its 50th ordinary session in the "Saint Valentin" conference room of the Geological and Mining Research Center (GMRC) in Kinshasa, on October 27, 2023.

Chaired by the President of the NSC, Professor MPIANA TSHIMANKINDA Pius, the session's agenda included the following items:

- Adoption of the Minutes of the 49th Ordinary Session of March 29, 2023;
- Record of decisions taken at the 49th Ordinary Session of December 14, 2023;
- Hearing of the reports of the commissions: Ethics, Organizational Framework of the NCRS and WERC, Internal Regulations of the NSC and 3rd cycle training for researchers;
- Examination of promotion and appointment files;
- Various.

Several decisions were taken and recommendations made during this session, with a view to further boosting the operation of Research Institutions.

It should be noted that the NSC meets in ordinary and/or extraordinary session in accordance with the law governing the scientific research sector, in order to analyze specific matters

Christian MAZONO and Delly MBEMBE /NSC

Brief

NSC President Professor MPIANA TSHIMANKINDA Pius visited the Research Center for African Languages and Cultures (RCALC) in Kisangani on an official mission.



The President of the CSN, Prof Pius MPIANA TSHIMANKINDA, and some staff from the RCALC during his visit to the institution.

The Congolese Smartphone "Okapi Mobile": an invention that makes the DRC proud

In Marrakech, Morocco, over 12,000 people from all over the world have been attending the Annual Meetings of the International Monetary Fund and the World Bank since Monday October 9.

At this major event, which embodies the idea that international cooperation is essential to solving global problems and building a better future, Congolese Technology is not absent.

It is validly represented by a man who has put his intelligence at the service of the world in general, and of his native land in particular, the Democratic Republic of Congo (DRC).

Eminent Professor Jean Mongu Bele, as it happens, took to the podium at the Assizes on Thursday October 12 to present

one of his inventions, the very first Smartphone Made in Congo.

Called "Okapi Mobile", it's true that this intelligent cell phone, which is currently sold in the USA, Europe and several other African countries, contributes to the development of the global economy.

In front of an audience impressed by this Congolese invention, which is the pride of Africa, Professor Jean Mongu Bele took the opportunity to unveil some of Okapi Mo-



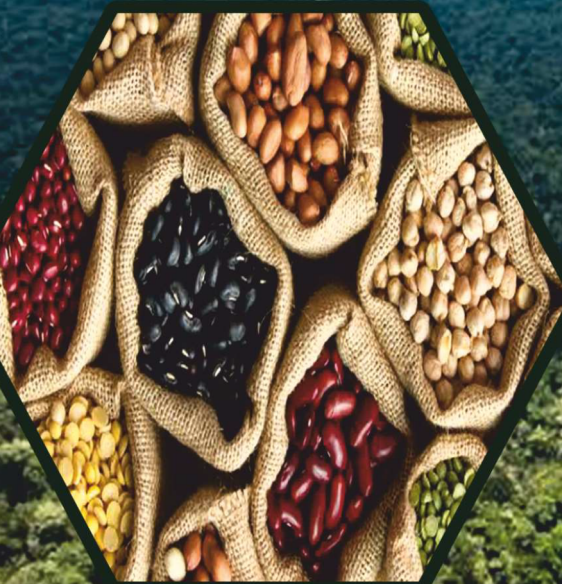
bile's features, including its IP 68 certification, which ensures total protection in water.

To prove his point, this Congolese inventor immediately demonstrated by placing his Okapi Mobile phone in a glass full of water for several minutes. The demonstration was greeted with applause.

Let's note that Professor

Jean Mongu Bele, a Congolese national, is a researcher in nuclear physics at the Massachusetts Institute of Technology (MIT).

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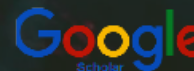


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In accordance with article 24 of Ordinance-Law n°82-040 of 5 November 1982 on the organization of scientific and technical research, the National Scientific Council is responsible for:

1. to deliberate on the guidelines and priorities of the scientific and technological research plans and programs to be carried out in the country ;
2. to deliberate on the allocation of resources from the State budget to scientific and technological activities;
3. supervising the financial management of research centers and institutes
4. approving the budgets of the Research Institutes and Centers and submitting them to the Minister for Scientific Research for approval
5. approving the organic regulations of the Research Institutes and Centers;
6. . proposing to the Minister for Scientific Research the appointment and promotion of scientific and administrative personnel.

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