

# Youth in Agriculture for the National Nutraceutical Industry



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# 4-H Clubs: Moulding youth in agriculture, entrepreneurship

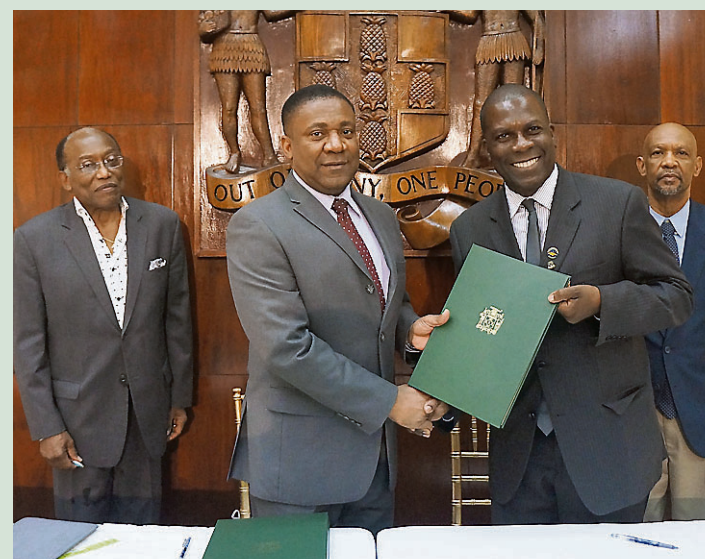
**T**HE JAMAICA 4-H Clubs, a partner of the National Nutraceutical Industry, continues to position its programmes to highlight its major role in youth in agriculture and entrepreneurship opportunities.

Through its National Youth in Agriculture Programme, the activities of which culminate at the Denbigh Agricultural, Industrial and Food Show, young people receive opportunities not only to participate in competitive events for national recognition, but also to apply for scholarships which enable them to pursue studies in agriculture and its related disciplines.

The Jamaica 4-H Clubs, as the youth training arm of the Ministry of Agriculture and Fisheries, has as its



Science and Technology is at the heart of the training received by members of the Jamaica 4H Clubs.



Phillip Paulwell (second left), minister of science technology energy and mining and deputy chairman of the National Commission on Science and Technology (NCST), and Senator Norman Grant (right), chairman of the Jamaica 4H Clubs, were the signatories, while Professor Errol Morrison (left), director general of the NCST, and Lloyd Robinson, project and product manager of the Jamaica 4-H Clubs, were witnesses to the signing of the memorandum of understanding.

## NCST and 4-H Clubs MoU potential game-changer

IN A strategic move to engage our youth in the potentially lucrative nutraceutical industry, the National Commission on Science and Technology (NCST) has entered into a three-year memorandum of understanding (MoU) with the Jamaica 4-H Clubs effective July 14, 2015.

The 75-year-old 4-H Movement is one of the oldest and largest youth-oriented organisations in Jamaica and the region; its membership is well over 90,000 clubbites. The organisation is supported by an islandwide corps of dedicated leaders, organisers, parish development officers, and volunteers, and a network of training and development facilities. With its excellent track record of outstanding achievements largely through its Youth in Agriculture Programme, the Jamaica 4-H Clubs is ideally positioned to drive the efforts to create a vibrant and sustainable nutraceutical industry in this country.

The symbiotic relationship represents a potential game changer.

Under the MoU, members of the Jamaica 4-H Clubs will be

educated on the principles and practices of the national nutraceutical industry, assisted with the development of related business incubators and, in general, become exposed to the application of appropriate technology to the business of agriculture. We believe that we must engage our youth if we are serious about development.

The MoU represents one of the most profound engagements involving youth and agricultural development that has been undertaken in this country in recent years. While we cannot discount its potential for wealth creation, we must focus on its transformational value.

Agriculture should be top priority, not a last resort based on subsistence farming and heavily dependent on the traditional machete, hoe and fork. Instead, agricultural production and agro-industry demand the application of appropriate science and related technology, sound business processes and the adherence to established standards and best industry practices. This is the change that

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mandate to train young persons between the ages of five and 25 in the disciplines of agriculture, home economics, entrepreneurship, healthy lifestyle, environmental awareness, and leadership. Currently boasting a membership of more than 94,000 islandwide, the organisation is now celebrating its 75th anniversary, which is being observed from April 1, 2015 to March 31, 2016.

Another major initiative is the Rio Tinto Scholarship Programme, which was initiated in 2010 by way of the desire of the Rio Tinto Alcan Inc to develop a fund to be invested in the social and economic initiative in Jamaica. This further evolved into the Rio Tinto Alcan Legacy Fund, where the former Alcan left a 'legacy' to reflect the long-standing relationships developed between the Government of Jamaica, the National Workers' Union and the parishes of St Ann, St Catherine, and Manchester.

To date, more than 84 beneficiaries have received assistance towards their respective courses of study from the fund, which is managed by the Development Bank of Jamaica and the Jamaica 4-H Clubs.

"This programme and what it means to the life of its recipients is extremely critical to youth development in agriculture," said 4-H Clubs executive director, Dr Ronald Blake.



# 4-H celebrates 75th year

**T**HE JAMAICA 4-H Club is celebrating its 75th anniversary. The organisation has planned and is implementing a series of events to commemorate this during the year. The membership of Jamaica 4-H Club now stands at just over 94,000 in 1,110 clubs. These clubs are predominantly formed in schools, with a minority membership in community and church clubs. At present, we have a total of 456 school gardens, and we are aiming that, over the next three years, we will have a school garden in every one of the 1,200 public schools.

The 4-H Club is currently implementing the Rural Youth Economic Empowerment Programme. This is a three-year programme to train 3,000 youths in practical entrepreneurial training. The 4-H partners in this venture include the National Youth Service, who have committed funding of \$45 million and have already distributed the first tranche of \$15 million; Development Bank of Jamaica – \$7 million; DAP – \$3 million; and HEART NTA has committed to providing the training and certification. This new area of entrepreneurship will now be an area of core training to the 4-H programme, in addition to agriculture, agro-processing,



Professor Errol Morrison (centre) and Senator Norman Grant (left) in an exchange with Daniel Malone (second right) of Peace Corps Jamaica and Basil Hylton, a local practitioner in the National Nutraceutical industry.

home economic, leadership and the environment.

On July 14, 2015, an MOU was signed between the Jamaica 4-H Clubs and National Commission on Science and

Technology (NCST). Elements of this MOU include:

- Design and implementation of projects using an applied science and technology approach.

- Provision of lands and greenhouse space for the production of nutraceutical plants.

- The 4-H, in partnership with UWI, will establish a plant propagation and tissue culture lab at Salisbury Plain in St Andrew.

- Provide analysis of production and projects, which will inform the development and improvement of policies.

Coming out of this MOU, we will introduce the growing of nutraceutical plants in our training and development centres across the 13 parishes, using both greenhouse and open-field agriculture methodologies. We will also be including this in the school garden programme in our schools as well and will expand it through our National Youth In Agriculture Programme.

This particular MOU between the Jamaica 4-H and the NCST is a game changer, as it will expose the Jamaican youth to this growing global nutraceutical industry. Prime Minister Portia Simpson Miller must be commended for her vision and commitment.

We can do it, so let's do it for the youth and for Jamaica!

**SENATOR NORMAN GRANT**  
Chairman  
Jamaica 4 H Club

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# MOU

CONTINUED FROM 10

our youth are expected to bring to the process.

Government agencies such as the NCST, the Scientific Research Council, the Bureau of Standards Jamaica, JAMPRO, the Rural Agricultural Development Agency, with support from academia, are now being positioned to play a lead support role in this transformation process.

The path to the desired objectives has begun in earnest. A National Nutraceutical Industry comprising producers, manufacturers, representatives from academia, key stakeholders, including other ministries, agencies, has been advanced.

This body has been leading the process of effecting appropriate legislation and will incorporate the development of standards and protocols, research facilitation and development, encourage strategic business alliances and enhance training and access to technical support. It is engaging traditional, new, and potential investors in the development of a viable vibrant and sustainable industry. The process involves our youth, women, traditional herbalists, farmers, and entrepreneurs, large and small.

Important also is the recent amendment to the Dangerous Drugs Act which, among other things, allows for the granting of licences for marijuana research, which is a fundamental step in efforts to liberalise the productive use of marijuana and unleash its potential for economic growth and development.

**PHILLIP PAULWELL**  
Minister of Science,  
Technology, Energy  
and Mining;  
Deputy Chairman,  
National Commission  
on Science and  
Technology

# Nutraceuticals to explore

**Shanika Allen**  
*Contributor*



## TURMERIC

Turmeric root is well known for its use in making curry powder and in other traditional Asian cuisine. The main active ingredient in turmeric is known as Curcumin. This compound functions as an anti-inflammatory and an antioxidant. Preliminary medical research has also shown that this important spice has antifungal and antibacterial properties.

For these reasons, turmeric is being used in a number of high-growth nutraceutical markets to support health in areas such as: immunity, natural anti-oxidants, joint/arthritis, blood sugar control/diabetes, Alzheimer's disease/dementia, heart health, and benign prostate. Turmeric sales nearly doubled in sales from \$103 million in 2013 to \$235 million in 2014, and are projected to be among the top-10 best-selling supplements through 2016 by Nutrition Business Journal.



## GINGER

Ginger root has been used as a spice and herbal medicine for thousands of years. This very important spice contains anti-inflammatory and antioxidant



compounds such as gingerols, beta-carotene, capsaicin, and curcumin, as well as a variety of vitamins and minerals.

Scientific research has shown that ginger may be useful in treating nausea caused by motion, chemotherapy or surgery. It is also used in treating osteoarthritis, lowering cholesterol and preventing the clotting of blood.

The present demand for ginger is very high. This high demand is not being met because of an undersupply from Jamaica or other countries that grow the crop. In 2013, Chris Reed, founder and CEO of a successful US drink company, REED's, said: "We are willing to buy 100 per cent Jamaican ginger if capacity is up to where it needs to be at a competitive price". This example demonstrates the huge potential which exists for the unique home-grown Jamaican ginger.



## MORINGA

The Moringa plant is a fast-growing, drought-resistant tree that is presently being dubbed as the 'miracle tree' for its wide range of medicinal uses. This plant is sun-and-heat loving and,

therefore, more suited for dry regions of the world such as Jamaica. In some parts of the world, it is considered an important food source. It is nutrient dense and contains more than 92 nutritional values, including vitamins, minerals, and eight essential amino acids.

Moringa has been used to treat and prevent a number of diseases and medical conditions, including weight management, pain relief, blood pressure regulation, and anaemia. Research findings have also suggested that nutraceuticals may be beneficial in the fight against some of the world's most urgent diseases such as cancer.

A high demand for Moringa has been reported in developed countries like the United States and Japan. There is also talk of Moringa being used to produce biofuel to meet the global energy demand.



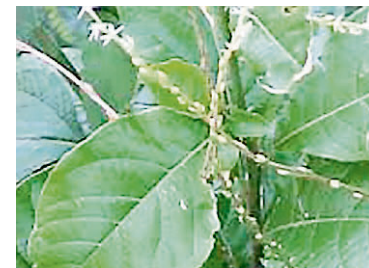
## PIMENTO

The pimento tree or 'all-spice', as it is commonly called, is indigenous to the Caribbean islands, although Jamaica has the longest history of continuously producing the crop since its discovery in 1509. Pimento is an important ingredient in jerk seasoning, and its leaves and wood are commonly used to smoke meat. This very fragrant plant is also used in perfumery and as a natural pesticide.

Two of the key compounds found in pimento have been found to have antiproliferative

and anti-tumour properties on human cancer cells. Scientific research has also demonstrated that compounds in the pimento plant show antibacterial, hypotensive, anti-neuralgic, and analgesic properties.

The United States does not produce allspice on a commercial basis, but relies on imports primarily from Mexico, Guatemala, Honduras, and Jamaica. Jamaican allspice is premium grade. According to the Ministry of Agriculture, the value of the country's international allspice exports peaked in 2005 at US\$2.8 million or 11 per cent of the island's agricultural exports. Since that year, allspice export value has ranged between US\$1.4 and \$2.1 million or three to seven per cent of all agricultural exports.



## GUINEA HEN WEED

The Guinea Hen Weed is a flowering plant with roots and leaves that have strong acrid, garlic-like odour. The plant reproduces all year and is used in teas, extracts, capsules, and as an insect repellent. Guinea Hen Weed is used extensively in folk medicine in South America and Colombia.

Active compounds have been discovered in Guinea Hen Weed such as flavonoids, triterpenes, steroids, and sulphur compounds. The sulphur compound dibenzyl trisulfide has been identified with active properties against cancer and HIV. Other compounds contained in the plant, such as phytochemicals a stilbin, benzaldehyde, and coumarin, have been documented with antitumorous and/or anticancerous properties as well. A study has also identified it as an immunostimulant.

There is an open market for a novel product with Guinea Hen Weed as the main or collaborative ingredient.



# Drinking coffee makes sense



Gusland McCook

JAMAICANS ARE not known to be coffee drinkers – well, not nowadays, that is. But are there many reasons why one should want to drink coffee and feel good doing it?

Numerous studies have been conducted on the effects of coffee on human health and, so far, the results are overwhelmingly in favour of the drinking of this beverage. Some of the benefits are related to the caffeine that is found in coffee. However, much of the other benefits are from the natural antioxidant compounds present in coffee.

To highlight the point, let us examine some of the proven benefits:

**1. Strokes:** Coffee contains antioxidants which reduce the effects of substances that are potentially damaging to the body. Antioxidants from coffee are said



to provide protection to the brain's blood vessels by shielding them from certain types of cholesterol and thus preventing the development of blood clots in the brain.

**2. Heart diseases and cardiovascular diseases:** Although caffeine might increase blood pressure, it does not pose any risk of increasing cardiovascular diseases. Other studies showed a possible preventive effect of coffee consumption against strokes.

**3. Diabetes:** Chemical components found in coffee have shown inhibitory effects on the formation of toxic substances in the pancreas. This is usually found in people with Type II diabetes. Research has shown that each cup of coffee consumed daily lowers

the risk of Type II diabetes by seven per cent.

**4. Liver cancer and cirrhosis:** One of the products of caffeine is praxanthine. Studies have shown that this product has been able to slow the growth of cell tissues in liver cancer, alcohol cirrhosis, and liver fibrosis.

Notwithstanding the demonstrated effects of coffee, it is important to remember that maintaining good health calls for an overall balanced diet, exercise and stress management. Next time you savour a cup of great Jamaican coffee, consider the benefits to your health, and remember to support our local coffee community!

**GUSLAND MCCOOK**  
Manager, Advisory  
Services Unit,  
Coffee Industry Board.



Prime Minister Portia Simpson Miller (left) accepts a basket of local herbal and medicinal plants from Dr Sylvia, head of medicinal plant research at the Biotech Centre, UWI. Under the MOU, youths will have the opportunity to expand their knowledge of local herbal and medicinal plants, their production and their uses.

## Regulation of the NNI

**Sheryl Dennis**

*Legal Officer, MOH*

IN SAFEGUARDING public health and promoting healthy lifestyles, the Ministry of Health supports the development of Jamaica's natural health products and, accordingly, will continue to play its part in the development of the National Nutraceutical Industry (NNI). The ministry is mindful that the regulation of the NNI at this time is of critical importance to safeguarding public health.

Regarding the ministry's current role in the regulation of products and certain facilities, we have commenced the necessary work to give effect to the amendment to the Food and Drugs legislation to ensure the appropriate regulation of the sector.

The legislation currently regulates foods, drugs, cosmetics, and devices. Given the extensive nature of the term 'nutraceuticals', there is a need to specifically regulate 'nutraceuticals' as a special class of products. While there is an existing Draft Bill which proposes to define over-the-counter products and new categories of products for human consumption, the industry has evolved beyond the amendments specified in the present bill, thereby giving rise to the need for further amendments.

The amendments which are now proposed, therefore, take account of the need to, among other things:

- Outline new categories of substances which characterise nutraceuticals.
- Outline the labelling and packaging requirements of nutraceutical products, including detailed requirements regarding the sale, manufacture, import, and distribution of the said products.
- Provide for the procedural and administrative guidelines for the registration of nutraceuticals.

In addition to the amendments to the Food and Drugs legislation, the ministry proposes the promulgation of new legislation, i.e., the Complementary and Alternative Practitioners Act to 'govern' the regulation of practitioners and facilities relative to the NNI.



Sheryl Dennis

*'We have commenced the necessary work to give effect to the amendment to the Food and Drugs legislation to ensure the appropriate regulation of the sector.'*

This proposed legislation will address:

- The establishment of and functions of a council and a registrar.
- The criteria for registration.
- Guidelines for the operation of the relevant facilities.
- Disciplinary proceedings.
- The establishment of an appeals tribunal to hear appeals of persons aggrieved by decisions of the council.
- Offences and penalties for breaches.

The relevant consultation with critical stakeholders is being undertaken in order to ensure the appropriate regulation of products to meet acceptable standards of safety and efficacy, and that the proposed regulatory framework suitably allows for effective monitoring of the industry.



# SRC the key to National Nutraceutical Industry

**A**S JAMAICANS, we may be familiar with the Coralita plant (the pink bush that grows on fences), which is traditionally taken as tea to treat diabetes, and similarly, the Dr Johnson Bush, an endemic plant found in Manchester and St Elizabeth, also taken in the form of tea as a treatment for sinusitis and colds. Though different by nature, these plants bear similar traits; they have all been used in folk medicine and have high antioxidant levels.

The potency of these plants was determined by the Scientific Research Council (SRC) after evaluating approximately 100 plants traditionally used in

folklore medicine. To date, the SRC has uncovered high antioxidant activity in over 40 per cent of the plants traditionally used in folk medicine, and has established a database pertaining to anti-oxidant and anti-inflammatory potency of these plants. Information garnered from research on these plants is important as it is used to guide development of nutraceuticals. Based on the fact that nutraceuticals are products, when consumed or used, result in specific health benefits, awareness of this industry has been heightened over the years, as many see these products as a

simple and attractive way to prevent diseases. The offshoot of this industry is also beneficial to the economy, as it has been proven that even in rough financial periods, people still continue to purchase nutraceuticals.

## SRC'S INDUCTION

The SRC's induction into the nutraceutical industry dates back to 2003 through a joint effort with the Organisation of American States, where it was established that ginger, as a nutraceutical agent, was most potent between six to seven months after planting. Since then, the council's role has become crucial to the

existence and continuance of the industry as tests are conducted and biological properties of local plants are validated in order to develop products having health benefits. This activity has facilitated the development of businesses through creation of nutraceutical products for small and medium enterprises.

Currently the SRC is able to test for antioxidants, anti-inflammatory and antimicrobial activity in plants and products. These are intrinsic qualities associated with nutraceuticals. Antioxidant potency is an indicator of the product's ability to combat ageing activity;

inflammatory properties is directly related to pain and joint fatigue and the antimicrobial associated with wound healing. In addition to these, the SRC also develops and evaluates functional beverages, as well as the filling of capsules as supplements. A manual filler that can fill approximately eight thousand capsules per day is currently available for rent at the SRC.

Recognising its importance as a facilitator of the development of the nutraceutical industry, the SRC stands ready to support all who wish to explore the varied possibilities and opportunities associated with this field.



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*"Confirming competence, providing confidence in the marketplace"*



Persons from various government, non-governmental, research, academic, and private-sector organisations were on hand to witness the signing of a memorandum of understanding with the Jamaica 4-H Clubs. Pictured here are Professor Colin Gyles, deputy principal of UTech, and Professor Gossett Oliver, vice-president, Graduate Studies, Research and Entrepreneurship, UTech.



# The BSJ – providing standards to support a successful industry



Dwight Ramdon

**Dr Dwight Ramdon**  
Science & Technology Division,  
BSJ

AS POPULATIONS age and become more health conscious, the consumer demand for natural health products or natural health foods will continue to grow. The nutraceutical industry seeks to meet this demand and presents significant growth and export potential. This is a low-hanging fruit towards the creation of jobs and the generation of foreign exchange. The industry is driven by the market and supported by sound scientific background. Jamaica is the home to many plants which have health benefits and, as such, Jamaica is perfectly positioned to capture niche global market access.

This nutraceutical industry

*'Jamaica is the home to many plants which have health benefits and, as such, Jamaica is perfectly positioned to capture niche global market access.'*

will involve participation of many government ministries and agencies, including the Bureau of Standards Jamaica (BSJ). The BSJ has accredited testing laboratories, which will support the safety of the foods/nutraceuticals for human consumption. The BSJ also intends to provide relevant

standards to support a successful nutraceutical industry. The relevant programmes – Jamaica Made Mark and Certification of Agricultural Produce – have been created to authenticate and protect our products in the global marketplace. These marks signify Brand Jamaica on these most deserving quality

products in trade.

The BSJ remains committed to quality, training, testing, standards development, and inspections to support our public- and private-sector partners. This industry will involve inputs from the ministries of agriculture, health, science and industry under the guidance of the National Commission on Science and Technology, with the support of the Office of the Prime Minister.

Farmers will be able to put idle lands to use and create employment for a low-skilled work force. The agricultural raw materials would be inputs to processing and packaging industries, supplying finished products to the local and international markets. The chain of production will be value added and standards led.



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CAROL STRAW

# JAMPRO fully supports the nutraceutical industry

**Carol Straw**  
Contributor

AS THE national trade and investment promotion agency, Jamaica Promotions Corporation (JAMPRO) is the gateway that connects the world to Jamaica's growing economy and industries.

The agency is in full support of the progression of the nutraceutical industry and works closely with local and overseas entrepreneurs who are interested in boosting this sector and creating natural health aids from Jamaica's exotic and nourishing flora.

The global nutraceutical industry is growing at a compound annual rate of eight per cent with expected earnings of US\$424 billion by 2017; it is the agency's goal to increase Jamaica's share of this global value. JAMPRO actively participates in the nutraceuticals enterprise team, which is focused on bringing structure to this industry.

The agency collaborates with public and private partners to create initiatives

*'JAMPRO has facilitated a number of companies involved in the nutraceutical industry with their export and other requirements through a number of interventions.'*

that will address the deficiencies being experienced by the nutraceuticals industry and improve its production and overall output.

In addition to participating in national bodies to develop the sector, JAMPRO has facilitated a number of companies involved in the nutraceutical industry, with their export and other requirements through a number of interventions

including:

- Capacity-building training, which includes improving productivity, packaging, labelling and logistics.
- Market intelligence.
- Marketing activities and linkages programmes.

With the continued support from the Government and private partners and demand for nutraceutical ingredients in industrialised countries, the industry has a bright future ahead as one of the leading sectors in Jamaica. The combination of the use of natural plant remedies, which is a Jamaican cultural tradition, and the manufacturing of pharmaceuticals through the nutraceuticals industry, will provide significant contributions to the economy.

JAMPRO will, therefore, continue to support the nutraceutical industry, and is prepared to facilitate entrepreneurs or companies who seek to establish themselves within this industry. The agency is dedicated to working with all stakeholders and seeing the continued growth of this rising industry.



**JAMPRO**  
TRADE & INVESTMENT JAMAICA

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