

# UMS shows the way in sustainable food production

**KOTA KINABALU:** Pandemics can lead to significant disruptions in the production of food and the global food supply chain.

Today, we live in a globalised-world in which countries rely on food produced in other countries of the world as a result of the unique policies and geographic proclivities which drive the global trade in commodities.

The recent decision by some countries to impose a moratorium on the export of rice has led to a spike in the prices of global commodities, the loss in productivity has been driven by the loss of productivity due to shortage of man-power as well as the detrimental effects of climate change.

Malaysia's food and livestock imports increased from RM38.9 billion in 2013 to RM51.3 billion in 2017.

The current Covid-19 pandemic poses a threat to global food security and this has prompted an urgent need for nations to be self-reliant in food production.

Malaysia is fortunate to be blessed with a conducive environment for the production of agricultural commodities as well as livestock in order to sustain the population, this in turn can offer employment opportunities for youth and provide an avenue for exercising self-esteem and pride in one's ability to be independent.

The Faculty of Sustainable Agriculture (FSA), Universiti Malaysia Sabah (UMS) has been providing real world training to students in the area of sustainable agriculture via three academic programs (crop production, horticulture and landscape, and livestock production programs) and in addition to this has produced 720 graduates over a period of 10 years.



Dr Januaris checking pak choy on layered hydroponics.



Upland rice production trial in the UMS Faculty of Sustainable Agriculture.

FSA has developed several innovations in the area of hydroponics, aquaponics, rice production and compost production by leveraging specific principles in the areas of plant production and microbial composting to improve plant productivity and contribute to long-term food security at the state and national level.

Hydroponics is a farming system which relies on the application of precise amounts of nutrients directly to the roots of the plant without the use of soil.

Culture of plants without the use of soil, or soilless culture as it is technically referred to can boost the growth of plants and minimise the cost of plant production as a direct consequence of high efficiency.

Hydroponic systems can be

combined with the production of fresh-water fish (or aquaponics) such as Tilapia as the waste products of the fish provide readily available nutrients to the plants in the form of nitrates, phosphates and potassium as well as micronutrients. The closed system also obviates the need for toxic chemicals such as pesticides and herbicides, thus making the crops pesticide free.

Dr. Januaris Gobilik, the Deputy Dean (Farm Management & Industrial Relations), Income Generation and Endowment Coordinator and the leader of the Agronomy and Vertical Farming Research and Technology Group has designed and developed an innovative hydroponic and soon aquaponic systems which he has optimized for the growth of leafy vegetables such as Pak Choy in collaboration

with Univision Marts (UVM) Sdn. Bhd. and extended this precise nutrient application practices to the production of Grapes as well as Figs in collaboration with Jongrapevines and Figs Garden (JFG) Enterprise.

The success of his work can be seen in the towers of leafy vegetables which he has produced as well as the training he has provided to both postgraduate and undergraduate students over the years.

Recycling agricultural wastes is another area in which Januaris has made an important contribution by the treatment of dairy and livestock farm wastes. This project is carried out in collaboration with Yun Fook Resources (YER) Sdn. Bhd. and Agro Borneo 3A.

Sustainable food production

depends on the localised production of biofertilizers as the cost of fertilizer constitutes a major cost of food production. Recycling of dairy wastes which are rich in macro and micronutrients as well as beneficial microbes can reduce the cost of chemical fertilizers or eliminate it completely.

The group of researchers at FSA has also been working actively on the production of upland, or what is locally known as hill varieties of rice (padi bukit). This is a hardy variety of rice which is rich in fibre and nutrients and has been sustaining humanity for centuries.

The rice can serve as a local substitute for the polished imported varieties of hybrid rice owing to its rich nutritive value. Livestock production is also another area which the group under Januaris has been working on over the years.

Their ongoing collaboration with Hafiz Farm (HF) Sdn. Bhd. has resulted in the development of Pakchong napier production technology and a locally manufactured feed called Hafiz Feed for the production of livestock for human consumption.

Researchers with the calibre of Januaris are representative of the key technical experts who can contribute to the vision of national food security and sustainable food production. Their initiative and innovative spirit as well as the training they provide to our youth are the foundation of sustainable food production.

Covid-19 has been a wake-up call for food security and now is the moment to convert this misfortune into an opportunity via the development of a strong and sustainable food production system.