



Introduced by **SENATOR IMEE R. MARCOS** 19 JUL 18 P 4:16

**AN ACT PROMOTING THE USE OF AEROPONICS, HYDROPONICS AND
AQUAPONICS FOR THE PRODUCTION OF HIGH VALUE FISH, CROPS AND
VEGETABLES, AND FOR OTHER PURPOSES**

EXPLANATORY NOTE

Despite the advances in modern agriculture, which includes high-tech farm mechanization, modern irrigation system, and advanced controlled environment agriculture, food production remains at the mercy of nature and is subject to various destructive elements of the changing climate.

The Philippines experience extreme weather events. Around 19 tropical cyclones or storms enter the Philippine Area of Responsibility yearly, not to mention the regular occurrence of El Niño and La Niña in the country. In fact, the Philippine Atmospheric, Geophysical, and Astronomical Services Administration (PAGASA) has warned of a "full-blown" El Nino this 2019, which means below normal rainfall, with dry spell or drought conditions in most parts of the country.

For this reason, there is now massive importation of crops and vegetables, and even fish in the country to augment local supply and tame its increasing and erratic prices in the market.

According to the Philippine Statistics Authority's (PSA) *Price Situationer of Selected Agricultural Commodities* for the first week of July 2019, prices of vegetables are lower in selected regional centers. For example, the price of a kilogram of carrots was lower by P10.00 in Cagayan de Oro City and by P20.00 in Baguio City and San Fernando City. On the contrary, it picked up by P10.00 in Batangas City, Legaspi City and Butuan City. Similarly, price movements in some fish species are noted in selected regional centers. Price declines from P5.00 to P20.00 per kilogram of bangus were registered in five regional centers. On the contrary, it was priced higher by P10.00 per kilogram in NCR and Kidapawan City. A kilogram of galunggong was cheaper by P10.00 in Cebu City and Cagayan de Oro City, and by P20.00 in Naga City. On the other hand, it climbed by P10.00 per kilogram in Baguio City, Batangas City and Cotabato City.

However, there have been news reports warning the public against the consumption of imported fish because it contains harmful substances and are unsafe -- round scad (galunggong) tainted with formalin, and cream dory and milk fish (bangus) that are double dead.

In view of the foregoing, and with the ever-increasing population and therefore huge demand in food supply, we must utilize advanced systems to grow more food while conserving earth's limited resources.

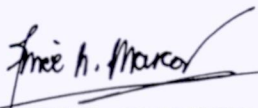
The country must devote more research and development in the use of state-of-the-art technologies aimed at improving agricultural production and ensuring food security and safety. Fortunately, new trends and innovative methods in fish and vegetable farming have evolved and is being used now locally and abroad.

Specifically, the adoption of soilless agriculture technologies such as aeroponics, hydroponics, and aquaponics are widely perceived as innovative measures to increase agricultural productivity.

Aeroponics is the process of growing plants in an air or mist environment without the use of soil or an aggregate medium. Hydroponics is the cultivation of plants by placing the roots in liquid nutrient solutions rather than in soil. Lastly, Aquaponics combines aquaculture and hydroponic plant production in a closed-loop water system that simultaneously grows both plants and fish.

This proposed measure seeks to promote the use of aeroponics, hydroponics, and aquaponics technology in agricultural production of high value fish, crops and vegetable to further increase volume of agricultural production and ensure food security and safety.

In view of the foregoing, approval of this bill is earnestly requested.


IMEE R. MARCOS
Senator

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Be it enacted by the Senate and the House of Representatives of the Philippines in Congress assembled.

1 SECTION 1. *Short Title.* – This Act shall be known as the "Soilless Agricultural
2 Production Act of 2019."

3
4 Sec. 2. *Declaration of Policy.* – It is hereby declared to be the policy of the
5 State to reaffirm the fundamental right of every person to food security. The
6 attainment of self-sufficiency in the field of food production is therefore adopted as a
7 primary State policy. For this purpose, key reforms for the advancement of, and
8 support to agricultural advancement in technology adaptation are hereby promoted
9 in order to ensure the food security of the country.

10
11 Furthermore, the State commits itself to the adoption of state-of-the-art
12 technologies and the active development of modern, appropriate and cost-effective,
13 and environmentally safe agricultural technology in order to ensure and provide food
14 security and safety.

15
16 Sec. 3. *Definition of Terms.* – For purposes of this Act, the following terms
17 shall mean or be understood as follows:
18

1 "*Aeroponics*" shall refer to the process of growing vegetation in an air or mist
2 environment without the use of soil or an aggregate medium. Aeroponic growing is
3 considered to be safe and ecologically friendly for producing natural and healthy
4 plants and crop.

5
6 "*Hydroponics*" shall refer to the method of growing plants in a water based,
7 nutrient rich solution. The basic premise behind hydroponics is to allow the plant
8 roots to come in direct contact with the nutrient solution, while also having access to
9 oxygen, which is essential for proper growth.

10
11 "*Aquaponics*" shall refer to the integration of aquaculture and hydroponic
12 plant production in a closed-loop water system that simultaneously grows both
13 plants and fish. In a symbiotic relationship, the waste that is produced by fish in
14 water tanks, which could become toxic for the fish if not cleaned, is used directly or
15 converted by bacteria into useful nutrients for plants.

16
17 Sec. 4. *Use of Aeroponics, Hydroponics, and Aquaponics Technologies.* – The
18 Department of Agriculture (DA) is hereby mandated to promote the use of
19 aeroponics, hydroponics, and aquaponics technologies as instruments to further
20 improve the production of high value fish, crops and vegetables in the country and
21 address food security concerns.

22
23 Idle government lands owned by either national or local governments or
24 available land resources in state universities and colleges shall be considered for fish
25 farming and growing crops and vegetables using aeroponics, hydroponics, or
26 aquaponics technology, whichever is applicable.

27
28 Sec. 5. *Comprehensive Research on Aeroponics, Hydroponics, and Aquaponics*
29 *Technologies Applied in Agricultural Production.* – For purposes of this Act, the
30 Secretary of the DA is hereby mandated to conduct a comprehensive research and
31 information drive on aeroponics, hydroponics, and aquaponics technologies applied
32 in agricultural production.

1 The DA is further enjoined to support research activities aimed at expanding
2 the knowledge and understanding of aeroponics, hydroponics, and aquaponics
3 technologies and to invest in advance technology research in order to adopt state-
4 of-the-art technologies to promote agricultural production of high value fish, crops
5 and vegetables.

6
7 *Sec. 6. Inclusion of Aeroponics, Hydroponics and Aquaponics Technologies in*
8 *Agricultural Training.* – Aeroponics, Hydroponics, and Aquaponics technologies, as
9 used in agricultural production, shall be integrated in the academic curriculum for
10 secondary and tertiary level students of both public and private academic
11 institutions, who are studying courses on Agriculture, Practical Arts, Home
12 Economics and/or other subjects related to agriculture.

13
14 The Department of Education (DepEd), in coordination with the Commission
15 on Higher Education (CHED), shall promulgate the necessary rules and regulations
16 for the implementation of this section within ninety (90) days from the date of
17 effectivity hereof.

18
19 *Sec. 7. Implementing Rules and Regulations (IRR).* - Within ninety (90) days
20 from the effectivity of this Act, the DA, in consultation with the Department of
21 Science and Technology (DOST), shall promulgate the necessary implementing rules
22 and regulations to implement the provisions of this Act.

23
24 *Sec. 9. Repealing Clause.* – All laws, decrees, orders, rules and regulations or
25 other issuances or parts thereof inconsistent with the provisions of this Act are
26 hereby repealed or modified accordingly.

27
28 *Sec. 10. Appropriation.* – The amount necessary to carry out the provisions of
29 this Act shall be included and incorporated in the annual general appropriations of
30 the DA, DepEd, and Commission on Higher Education (CHED).

31

1 Sec. 11. *Separability Clause.* – If any portion or provision of this Act is
2 declared unconstitutional, the remainder of this Act or any provision not affected
3 thereby shall remain in force and effect.

4

5 Sec. 12. *Effectivity Clause.* – This Act shall take effect after fifteen (15) days
6 following the completion of its publication either in the Official Gazette or in a
7 newspaper of general circulation in the Philippines.

Approved,