

SIXTEENTH CONGRESS OF THE REPUBLIC  
OF THE PHILIPPINES  
*First Regular Session*



Senate  
Office of the Secretary

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SENATE

S. No. 88

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Introduced by Senator Manuel "Lito" M. Lapid

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### EXPLANATORY NOTE

Article 14, Section 10 of the 1987 Constitution provides that "science and technology are essential for national development and progress." As such the State shall give priority to research and development and their utilization for the improvement of the lives and welfare of the general public.

One area where research and development can be applied is the use of state-of-the-art technologies to improve agricultural production and ensure food security. Aeroponics technology can be applied in the production of agricultural crops and vegetables.

Aeroponics is the process of growing plants in an air or mist environment without the use of soil or an aggregate medium. Aeroponic culture differs from both hydroponics and in-vitro (plant tissue culture) growing. Unlike hydroponics, which uses water as a growing medium and source of essential minerals to sustain plant growth, aeroponics is conducted without a growing medium.

All over the world, aeroponics is considered to be safe and ecologically friendly for producing natural, healthy plants and crops. The main ecological advantage of aeroponics is the conservation of water and energy. When compared to hydroponics, aeroponics offers lower water and energy inputs per square meter of growing area.

Plants and agricultural crops grown using aeroponics spend 99.98% of their time in air and 0.02% in direct contact with hydro-atomized nutrient solution. The time spent without water allows the roots to capture oxygen more efficiently. Furthermore, the hydro-atomized mist also significantly contributes to the effective oxygenation of the roots. Aeroponics allows more control of the environment around the root zone, unlike other plant growth systems, the plant roots are not constantly surrounded by some medium (as, for example, with hydroponics, where the roots are constantly immersed in water).

Aeroponic systems are more cost effective than other technologies because of the reduced volume of solution input required. Also, less water and nutrients are needed in the system at any given time compared to other nutrient delivery systems. The need for substrates is also eliminated, as is the need for many moving parts, resulting in lowered manufacturing cost and reduced maintenance costs.

With aeroponics, the deleterious effects of seed stocks that are infected with pathogens can be minimized due to the separation of the plants and the lack of shared growth matrix. In addition, due to the enclosed, controlled environment, aeroponics can be an ideal growth system to grow seed stocks that are pathogen-free. The enclosing of the growth chamber, in addition to the isolation of the plants from each other helps to both prevent initial contamination from pathogens introduced from the external environment and minimize the spread from one plant to others of any pathogens that may exist.

This proposed measure seeks to promote the use of aeroponics technology in agricultural production of high value-added crops and vegetable to further increase volume of agricultural production and ensure food security.

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



MANUEL "LITO" M. LAPID  
Senator

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13 JUL -1 AM 11:45

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AN ACT

PROMOTING THE USE OF AEROPONICS TECHNOLOGY TO BE APPLIED IN AGRICULTURAL PRODUCTION OF HIGH VALUE-ADDED CROPS AND VEGETABLE FARMING TO ADDRESS FOOD SECURITY CONCERNS OF THE COUNTRY AND JUDICIOUSLY UTILIZE SCARCE FERTILE LAND RESOURCES

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

1  
2 SECTION 1. *Short Title.* - This Act shall be known as the "*Aeroponics*  
3 *Technology in Agricultural Production Act of 2013*".

4  
5 SEC. 2. *Declaration of Policy.* - It is hereby declared the policy of the State  
6 to reaffirm the fundamental right of every person to adequate food and to be free from  
7 hunger. The achievement of self-sufficiency in food production is therefore adopted as a  
8 primary State policy. Towards this end, key reforms for the advancement of, and  
9 support to agricultural advancement in technology adaptation is hereby promoted in  
10 order to ensure the food security of our country.

11 Towards this end, the State commits itself to the adoption of state-of-the art  
12 technologies and to the promotion of the development of modern, appropriate and cost-  
13 effective and environmentally safe agricultural technology in order to ensure and  
14 provide food security to the country.

15  
16 SEC. 3. *Definition-* For purposes of this Act, the term "*Aeroponics*" shall  
17 refer to the process of growing vegetation in an air or mist environment without the use  
18 of soil or an aggregate medium. Aeroponic growing is considered to be safe and  
19 ecologically friendly for producing natural, healthy plants and crops.

20  
21 SEC. 4. *Use of Aeroponics Technology.* - The Department of Agriculture  
22 (DA) is hereby mandated to promote the use of aeroponics agriculture as an instrument

1 to further improve the production of high-value added crops and vegetables in the  
2 country and address the food security concerns in the country.

3 Idle government lands owned by either national or local governments or  
4 available land resources in state universities and colleges shall be considered for  
5 growing crops and vegetables using aeroponics agriculture.

6  
7 **SEC. 5. *Comprehensive Research on Aeroponics Technology Applied in***  
8 ***Agricultural Production.*** - For purposes of this Act, the Secretary of the DA is hereby  
9 mandated to conduct a comprehensive research and information drive on aeroponics  
10 technology applied in agricultural production in order to further improve food  
11 production.

12 It shall support research activities to expand the knowledge and understanding  
13 of aeroponics technology to be used in agriculture production, including a renewed  
14 investment into advance technology research in order to adopt state-of-the-art  
15 technologies to promote agricultural production in our high value-added crops and  
16 vegetables.

17  
18 **SEC. 6. *Inclusion of Aeroponics Technology in Agricultural Training.*** -  
19 Aeroponics technology as used in agricultural production shall be integrated in the  
20 academic curriculum for secondary and tertiary level students of both public and  
21 private academic institutions studying courses on Agriculture, Practical Arts, Home  
22 Economics and/or other subjects related to agriculture.

23 The Department of Education (DepEd), in coordination with the Commission on  
24 Higher Education (CHED), shall promulgate the necessary rules and regulations for the  
25 implementation of this Section within six (6) months from the date of effectivity hereof.

26  
27 **SEC. 7. *Appropriation.*** - The amount necessary to carry out the provisions  
28 of this Act shall be included and incorporated in the annual general appropriations of  
29 the DA, DepEd, and CHED.

30  
31 **SEC. 8. *Implementing Rules and Regulations (IRR).*** - Within six (6) months  
32 from the date of effectivity of this Act, the DA, in consultation with the Department of  
33 Science and Technology (DOST), shall promulgate the necessary implementing rules  
34 and regulations to implement the provisions of this Act.

1           **SEC. 9.       *Separability Clause*** - If any part or provision of this Act shall be  
2 held unconstitutional or invalid other provisions hereof which are not affected hereby  
3 shall continue to be in full force and effect.

4  
5           **SEC. 10      *Repealing Clause*** - All laws, presidential, executive orders, rules,  
6 and regulations or parts thereof which are inconsistent with the provisions of this Act  
7 are hereby repealed or modified accordingly.

8  
9           **SEC. 11.     *Effectivity Clause.*** - This Act shall take effect fifteen (15) days after  
10 its publication in the Official Gazette or in at least two (2) newspapers of general  
11 circulation.

*Approved,*