The Feasibility of Integrated Pyramidal Agriculture System to Address Global Food Security Challenges

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The world is encountering unprecedented challenges related to growing populations and diminishing resources. Growing populations have created food shortages. Increasing food output means an increase in energy and water resources. The main objective of this work was to overcome the state of food insecurity in the world, which is only increasing. We try to solve this problem through the design of an integrated pyramidal agriculture system. The design: increases productivity by 70%; reduces water input by 60%; decreases amount of fertilizer by a rate of 50%; increases agricultural area by four times. The integrated pyramidal agricultural system was tested on an area of 1 m2 to grow cherry tomatoes. The results were compared with normal land. The yield of plants in the integrated pyramidal system was 20 compared to 4 in the normal land, a mass yield of 10 kg/m2 compared to 4 kg/m2, and a cost of $2.4/m2 versus $5.75/m2. The integrated pyramidal system has many benefits such as increased revenue from increased yields, and decreased water and energy costs.

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