Vertical farming

1 Choose the correct words for the following text.

Vertical farming is a revolutionary and more **1.** ..... method of agriculture, particularly if you need to produce food in environments **2.** ..... arable land is unavailable or rare.
In short, it is the practice of producing food in vertically stacked layers, commonly integrated into other structures like a skyscraper, shipping container or repurposed warehouse.
3. ..... main goals are:

- to produce more foods per square meter;
- to perfectly combine natural and artificial lights;
- to spare soil by replacing it with **4.** ..... growing mediums (aeroponic, aquaponic or hydroponic mediums);
- to guarantee a **5.** ..... footprint: as less land is used, existing horizontal farmland can be returned to its natural ecosystem;
- to spare energy resources and water (70-95 % **6.** ..... than required for normal cultivation).

Additional advantages of this farming innovation are:

- it provides a greater certainty of harvest output throughout the year, not being affected by unfavourable weather conditions;
- it allows an increased production of organic crops, thanks to a well-controlled indoor environment;
- it is human and environmentally friendly: farmers are not exposed to hazards related to heavy farming equipment, poisonous chemicals, etc., and biodiversity can be safeguarded, as no disturbance is caused **7.** ..... wildlife.

However, this farming method entails some limitations:

- greens grown in vertical farms are **8.** ..... expensive than their traditionally grown counterparts, which means that they are likely out of reach for the average consumer;
- construction of vertical gardens is financially and technologically challenging and requires high maintenance compared to horizontal green spaces;
- not all plants can be grown using this format: vertical gardens are better suited for plants that grow upwards rather than outwards. Depending **9.** ..... the setup, there is often very little space for the roots to grow. Vertical planting structures also are typically unable to support larger plants, unless they are kept in a heavy-duty planter;
- as vertical farming takes place in a controlled environment without the presence of insects, the pollination process needs to be done manually, which is labour intensive and costly;
- if, on the one **10.** ..... it needs fewer workers, on the other, it needs more skilled and costly labour;
- the entire vertical farming is extremely dependent on various technologies for lighting, maintaining temperature, and humidity: unfortunately, the technologies in use today may not be ready for mass adoption.



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1.	**a.** sustained	**b.** sustainable	**c.** sustaining
2.	**a.** where	**b.** which	**c.** whom
3.	**a.** Its	**b.** It's	**c.** It
4.	**a.** alternated	**b.** alternative	**c.** traditional
5.	**a.** consistent	**b.** smaller	**c.** deeper
6.	**a.** more	**b.** fewer	**c.** less
7.	**a.** for	**b.** by	**c.** to
8.	**a.** roughly	**b.** less	**c.** more
9.	**a.** on	**b.** from	**c.** of
10.	**a.** side	**b.** hand	**c.** corner

2 Write the jumbled words in the correct order.

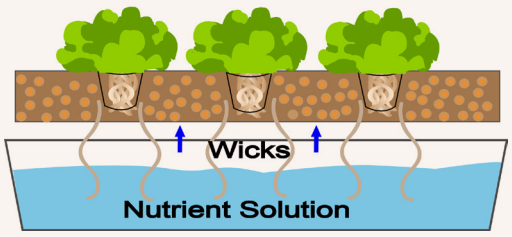
1. improve/the/used/efficiency/technology/Modern/is/to/lighting
2. farming/and/innovative/impact/minimal/energy/resources/method/This/guarantees/land/water/on
3. are/common/very/Non-soil/farming/in/mediums/vertical
4. environment/possible/crop/indoor/a/controlled/is/production/Year-round/in
5. farming/to/shortage/answer/could/the/world/food/the/Vertical/be/of/in/the
6. nutrients/submerged/The/in/plants/solution/of/roots/the/are/a/of
7. amounts/emissions/helps/high/water/save/It/of/energy/and
8. production/natural/of/To/methods/preserve/consider/need/habitats/we/to/new/food



HYDROPONICS

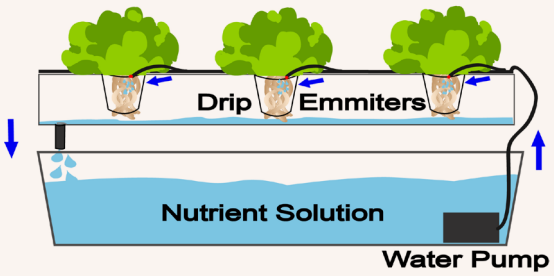
These are some of the different types of hydroponics that are most successfully and commonly used.

Wick System



- The **Wick** system is the simplest of all the hydroponics and doesn't require any pumps or electricity. This is a great starter system to get involved in if you are new to hydroponics. Whereas it doesn't work so well for bigger plants that suck up a lot of water, it is mostly suitable for non-fruiting plants like lettuce and herbs. In this system, plants in their pots sit just above the reservoir containing the nutrient solution. Through the capillary action, a minimum of two wicks transport the nutrient solution to the plants. A drawback with the wick system is the unevenly absorption of nutrients, which could cause a toxic build-up in the growing medium; in addition, water in the reservoir could become stagnant and mould could pollute the system if not cleaned regularly.

Drip System



- **Drip** hydroponics can be set up for almost any type of plants you would like to grow. This system is rather simple: water is pumped in tubing to one or more plants; the nutrient-rich water then flows over the grow medium and drips down over the plant roots. Drip systems can be set up in either a recovery or a non-drip recovery method, depending on the reuse of the nutrient solution after it is dripped over the roots.

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