

Solar Energy in Agriculture

Mo Naushad¹ and Ankita Sagar²

¹M.Sc. Scholar (Agronomy), United University, Jhalwa, Prayagraj (U.P.)

²Assistant Professor, Faculty of Agriculture & Allied Sciences, United University, Jhalwa, Prayagraj (U.P.)

ARTICLE ID: 77

Solar energy in Agriculture

Technology is always changing, which benefits the agriculture industry. Technologies that use electricity, a non-renewable energy source, produce more pollution. Because it causes climate change, which is bad for both humans and animals and plants, pollution is bad. We must transition agricultural machinery from electric sources to renewable energy sources in order to safeguard the environment from pollution.

What are the benefits and why switch from electric to solar?

There are various benefits of solar power over electricity, some of them are: -

- ❖ Solar energy is clean and eco-friendly, it doesn't pollute the environment.
- ❖ It is a renewable source of energy and has maximum usage.
- ❖ It will help in reducing electricity bills and can save your money.
- ❖ Solar power is more secure than electrical energy, whether it is for use or maintenance and repair.

Scope of solar energy in Agriculture

Since carbon dioxide emissions are rising by 1.3% year from 2014 to 2019, human activity is to blame for climate change. The energy industry is driving the global energy market for additional energy generating capacity by accepting responsibility and supporting policies in technology and renewable technologies. With about 115GW and 71GW respectively, 2020 was the biggest year for the industry for solar and wind energy. By 2050, installed solar photovoltaic power output would total 14,000 GW. Solar power and solar photovoltaics are appealing options for supplying the electricity needed for home utilities, the operation of electric cars, as well as for cooling and heating.

There are various technologies that are based on solar power and are used in the agriculture sector

1- Solar Tiller

One of the greatest agricultural inventions ever made. It is the most beneficial and practical agricultural equipment for creating a comfortable and peaceful farming environment. A power tiller was often employed for modest agricultural tasks, and many equipment were utilised for both simple and complex tasks in farming. A cultivator, water pump, earth auger, boom sprayer, e-scooter, and trolley are some examples of accessories you may attach. One of the amazing advancements in the agriculture industry is this.



Solar Tiller

2- Solar milking machine

To speed up, simplify, and reduce the cost of milking cows and buffaloes. Solar-powered milking equipment has already been used by some farms. These marvels of green technology have not only made milking easier, but also cut down on the amount of time needed to milk each cow. In contrast, excluding the additional labour, one cow typically requires 30 minutes to milk. This type of equipment can extract milk in 8 to 12 minutes and is controlled by one person. With this device, up to 20 to 30 cows' milk may be collected in an hour.



Solar milking machine

3- Solar fencing systems

It functions similarly to an electric fence, which shocks people or animals who come into touch with it with a sharp but temporary jolt. It has a deterring impact while preventing any human casualties. You don't have to murder animals to defend your property.



Solar fencing systems

4- Solar powered irrigation

Using solar energy to irrigate crops. Solar irrigation has the potential to revolutionise Indian agriculture and improve the lives of small-scale to marginal farmers. Solar energy is converted into electrical energy, which is then stored in batteries. Solar pumps are produced by several businesses. Solar-powered pumps are used to transport water from reservoirs to

fields. These include standard motors, as well as submersible and portable solar pumps. Additionally, it aids in better groundwater management.



Solar powered irrigation

5- Solar tractors

A solar tractor is a vehicle created primarily to move agricultural equipment or trailers while moving slowly and with high tractive effort. The phrase is most frequently used to refer to a farm vehicle that has the power and traction to automate agricultural activities, particularly tillage and now a variety of other jobs. If an agricultural implement is mechanized, it can be placed on the tractor or pulled behind the tractor as a power source.



Solar tractors

6- Solar sprayer

The solar-based pesticide spray pump is one of the improved versions of a petrol-engine pesticide sprayer pump. It is vastly used in the agricultural field and also used for many other purposes. This is having more advantages over petrol engine sprayer pumps. It uses solar power to run the motor so it is a pollution-free pump compared to a petrol engine pump.



Solar sprayer

7- Solar insects and pest traps

Solar bug traps feature the most recent UV illumination technology. Flying nymphs and adults are attracted to a spectrum of wavelength frequencies. It will switch on and off on its own. This function makes it possible to collect insects and pests that harm the crop, and then those insects or pests fall into the detergent solution that is maintained there. In such solution, the insects will thus perish.



Solar insects and pest traps

Conclusion

Technologies that depend on energy confront challenges powering their pumps and equipment owing to shortages caused by the increasing demand for electricity. In order to satisfy this need and address many of the issues farmers encounter as a result of the lack of energy, solar-powered solutions might be a fantastic choice.

