

# Solar Powered Agricultural Tools in India Overview

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**Abstract -** India has very great opportunity of making solar energy. The geographical location of the India gets possible making solar power. India is a very hot country. It receives sunlight all over the year. Solar power helped to people for different way. Agriculture is backbone of Indian economic. Renewable energy is used for agricultural tools in India. Nowadays most of the states introduced solar powered agricultural tools in India.. Most of the North state has been using solar powered agricultural tools. When we using solar energy, reduce the uses of firewood and dung cakes in rural. Solar agriculture tools are expensive. Government provide some subsidies to Solar Agricultural tools. Main drawback of No awareness about solar energy is rural people. Solar power is initial cost very high due to farmer fear install solar power. Rural people did not get awareness about solar energy. In this paper deals with Solar powered agricultural tools in India.

**Key words:** Solar heat collector, Solar Mowers & Tractor, Photovoltaic Solar Greenhouse.

## I. INTRODUCTION

India is an agricultural based country. Solar energy has vital role developing agriculture usage. Most of the state in India used solar energy for agricultural tools. Renewable energy is expensive compared solar energy. Solar energy gets endless due to renewable energy. Gujarat has number one using solar energy. These States gave incentives and less tax to solar energy. Solar powered agricultural tools help farmers' different way. It has less maintenance and once installation charge very high. Farmer gets better benefit for using solar agricultural tools.

Solar power also gets financial benefit in the long term. You won't have to fear as much about rising utilities in the coming years with solar power. If you ever want to sell your property, you will also have increased property value from solar power. Your solar power equipment will most likely be in better shape, as you have the ability to use a multitude of equipment options and be satisfied with 25-year warranties for equipment. The advantages are many and varied, including a cleaner environment. All these tools can be manufactured in small volumes.

### Objectives of Study

1. To Study different types of solar agricultural tools and functions
2. To Study advantages and challenges of solar agricultural tools

## II. SOLAR ENERGY IN INDIA

India has good opportunity for using solar power because all over the year receiving sunlight. Most of the state installed solar power that solar is renewable energy and

less maintenance.. India large area is located in village that solar heat collector are installed very easy. Solar energy get very fast due to sunlight get full day every day. Fire woods dung cake usage is very less. Solar power agricultural tools helped to farmer different way. Pollution free environment is major benefit of farmers. Government of India promoted solar energy of different way. Advantages of farmer is that no diesel and electricity bills. Solar power stored in batteries and using night times and low sunlight.

### Difference between Solar Energy and Conventional Energy

Basis of difference	Solar Energy	Conventional Energy
Cost	High expenditure	Low expenditure.
Possible Renewable	Renewable	Non renewable
Pollution	Cause Pollution	Pollution free
Maintenance.	Easy maintenance	Very expensive to maintain
Examples	Solar energy	Coal, Petroleum, Natural gas, Water power etc
Tax Incentives	Get Tax Incentives	No Tax Incentives

### Different types of Solar Powered Agricultural Tools

1. Solar Farming
2. Solar Water Pumping System
3. Solar Dryer
4. Solar Greenhouse
5. Solar Electric Fence

## 6. Solar Mowers & Tractors

### 1. Solar Farming

Solar farming use agricultural purpose. It is functioned by using solar power. It is easy, cost effective, genuine and long lasting. Tractors, watering systems, rotator, roller, Planter, sprayers, broadcast seeders etc. are powered diesel and Electricity power. Now In India all agricultural tools are operated by solar energy. It is very useful for farmers because less maintenance and low cost. Solar energy are renewable energy on compare other conventional energy. Most of the north India state use of solar powered agricultural tools,

### 2. Solar Water Pumping System

Solar water pumping system utilise for agricultural sector. It is recharged by solar energy. Most of the farmers use solar water pumping system. These systems have on and off switch control. Solar energy is transformed by electricity power. Solar powers are stored by Batteries. Some producer such as Kirloskar, Schneider Electric, Tata Solar, etc. offers a vast range of solar pumping systems in India. Solar water pumping use 5 HP motors. This price is INR 43900 in India. Government provides some incentives and tax concession. Solar water pumping, the system has less pollution and save environment. Large numbers of farmers use solar water pumping system because no electricity bills and diesel. The system has less pollution and save environment.

### 3. Solar Dryer

Solar dryer is very helpful for farmers' different way. It utilised wheat, paddy and other agricultural goods. These dryers regularly, use passive solar panels for generating energy. Solar dryer contents of solar collector. In India can use of processing of vegetable and other agricultural product. Main advantages of solar dryer dry some agricultural product. These type dryer can save agricultural product and goods very long term usage. Solar dryer safe of farm manufacture includes vegetable, fruits and spices. Solar dryers contents solar air heaters and electric blower. It controlled air temperature. Most of the part with better moisture.

### 4. Solar Greenhouses

Solar green house was started by prime minister. It is main motive helping rural people. It install solar collector. Power gets from sunlight. It is very useful farmers. All green houses gets electric power through solar power stored to electric batteries. Batteries use night times and cloud weather condition. These types of house less cost and low maintenance. There is electric bills that using solar powered light and other home appliance. Government of India provide incentives to people. This scheme is very help full low level people. Some of the

village there is no electric power now so solar power helping people.

### 5. Solar Elective fence

Solar elective Fence is powered by solar energy. It uses for the cattle farms. Solar electric Fences contents of a SPV unit and 12 V batteries. It gets 10 MA power come quickly. Readymade solar fence chargers can recharge batteries powered. Solar fetch price is INR 50000 per acre. Electric power charged batteries. Batteries cost is expensive. These types of batteries replace four year once changed. Batteries cost is very high and less maintenance.

### 6. Solar movers and Tractors

Programmed to be remotely operated. Solar Movers and tractors are powered by solar power. There is no Oil and electric power. These types of movers and tractors high cost and low maintenance. Batteries are recharging solar power. Tractors planting machine help farmer's in different ways. Nowadays diesel price is very high cost. Farmers do not get adequate income from agriculture field. Solar Tractors and Movers are used by farmers. Operating is very low compare conventional tractors. Farmer's usage is very high now. Most the farmers want to buy solar movers and tractors.

### Advantages of Solar Powered Agricultural Tools

1. Solar power is pollution free
2. Less dependence on foreign oil and fossil fuels
3. Renewable clean power that is charged every day of the year
4. Income on investment and no paying for utility bills
5. There is no maintenance for solar collectors
6. Generates jobs by employing solar panel Producer, solar installers, etc. and in turn improve the economy
7. Surplus power can be sold back to the power company
8. Government grants, tax incentives, and rebate programs are available to use with opening cost
9. Solar energy is safe then conventional energy

### Challenges of solar agricultural tools

1. Initial cost is very high
2. Farmer cannot know awareness about solar agriculture tools
3. Government is not help to implement of solar agricultural tools
4. Less production in the winter months
5. Rechargeable batteries cost is very high

6. Solar agriculture tools cannot work night days due to there is no sunshine
7. Solar panels are unable produce large level due to lack of material and technology.

### III. CONCLUSION

Central and State Government should provide Subsidies to Solar agricultural tools. People do not able to understand solar energy benefits. Farmer should be motivated by Government. Solar Energy has renewable energy compare other energy. Solar agricultural tools are less maintenance then other conventional energy. Solar initial investment cost is very high then diesel machinery. Government will conduct programme about solar energy and solar related agricultural tools. Most of the farmer wish to use solar agricultural tools because less pollution and green environment. Coming day, bright futures get solar agricultural tools.

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