

Role of Modern Electronics in Agriculture

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Population growth is rapidly accelerating, intensifying the pressure on food production. But to become self sufficient in food and avoid food shortages, one can use machinery and electronic devices to support the farmers for the proper growth of the crop. In this article, we are discussing some smart electronic devices which can be used for agriculture purpose.

Electronic equipments used in agriculture

There are many new electronic devices/equipments in the market, which have benefitted many industries and agriculture is definitely on the top.

1. Agriculture Drone: An agriculture drone is a smart electronic device that can fly and control with a remote control device and is used for many agricultural purposes. The multispectral sensor deployed on a drone can provide the farmer information on how better to produce. Water based sensors will give accurate information on the rate and time when the plants



Fig.1. Electronic Drone Sensor

need irrigation reducing water wastage and improving the result of farming. Sensors can even help us to point out the unhealthy area of the crop and allowing farmers to use fertilizers and spray the pesticides appropriately.

2. Soil Moisture Sensor: It is an electronic device that can use to check the volume of water in the soil. It is a necessary device to check the humidity of the field soil, which is a better thing for the better growth of the crop.



Fig.2. Soil Moisture Sensor

3. Nitrogen Sensor: It is an electronic device used to measure the percentage of the nitrogen existence in the soil even in the tiny plants and thus helps the farmers for better health of crop.



Fig. 3. Nitrogen Sensor

4. Power Water Pumps: Thanks to the evolving electronics sector, farmers can now use equipment like advanced water pumps and grow crops like rice, even in the middle of a desert. An excellent example would be the Egyptian farmers, who use water from River Nile to grow rice. There are also water sprinklers which help in keeping the farm irrigated for better produce.



Fig.4. Power water pump

5. Power Tillers: Power tiller is one of the most important as well as a popular component or farming tool that is highly required. Power tillers are multi-purpose tool for farming.

- It helps in preparing the soil, sowing seeds, planting seeds, and combining division rotating ploughing etc.
- It also warms the soil before sowing by burying its head into it.
- It thus helps in cultivating the land; it is very cheap and easily accessible and works brilliantly to make the soil ready for cultivation.



Fig.5. Power Tiller

6. Powerful Charging Sprayer Pump: It uses a battery oriented DC motor and is used for: It is used for spraying chemicals such as pesticides, insecticides, herbicides, fungicides at gardens, farms, and agricultural land to protect crop from pest attack and provide crop nutrients. Therefore, these battery sprayers have become one of the vital pieces of equipment to use in agriculture.



Fig.6. Power Charging Spraying Pump

7. Electronic Leaf Blower: It is a power packed tool which is used for cleaning the garden. It is used to remove debris such as leaves, grass cuttings, fallen fruits from garden and outdoor places. It is used to gather dead leaves in garden and helps in sanitizing garden.



Fig. 7. Electronic Leaf Blower

8. Power Weeder: Power weeder is a farm equipment utilized for secondary tillage.

- It is used in farming activities to remove the weeds and control the plant from degrading the top fertile layer of the soil or say the fertility of soil.
- It is necessary tool for every Indian farmer to carry out farm based activities.
- The main aim of a power weeder is to cultivate or de-weed between rows of various agriculture, horticulture, and plantation products such as paddy, sugarcane, fruits, vegetables, and so on.



Fig.8. Power Weeder

9. Power Reaper Machine: It is a self propelled reaper with rotator blades which helps to cut crops effectively. It is agriculture machinery that helps to harvest crops when they are ripe.

- It easily cuts and harvests various crops with less effort.
- Suitable for various crops like Paddy, Bengal Gram, Black Gram, Green Gram, Wheat, Soybean, and Mustard etc.



Fig. 9. Power Reaper Machine

10. Electronic Colour Sorter: It consists of a micro-processor based roller feeding system. It is used for sorting bold grains like coffee, peanuts, peas, seeds etc. The optical sorter separates any stones, mouse droppings and discoloured, toxic or otherwise unacceptable items.



Fig. 10. Electronic colour sorter

Conclusion

- These power operated equipments are cost effective, easy to handle, saves time and replaces the labour upto maximum, so it saves labour cost.
- It is now possible to cultivate nearly 2 acres of land with little to no effort using the latest equipment and harvest technology. With planters and harvesters, the process has been made far simpler. We can now grow a vast number of food items in considerably lesser time and effort.
- Using these electrical technologies there occurs increased crop productivity, decreased use of water, fertilizers and pesticides, which in turn keeps food prices down.
- Farmers and agriculturalists use electrical systems to farm, weed prone and harvest farm products. Electrical engineers also design, develop and maintain agricultural machinery and electric devices. For this reason, we can conclude that electrical engineering is somewhat related to agriculture and farmers must use these electronic devices to get extra good production of the crops.