

# Solar Based Trapper for Pest Control

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**Abstract—India's population works primarily in agriculture. Farmers depend on their crops for their primary source of income, but insects and other climate change harm them, causing yearly production losses. Using insecticides is one popular therapy for this. However, when pesticides are used in large enough quantities, they have a negative influence on people, animals, and the environment. To avoid this, solar-powered insect control trapper employed. In this model, an automatic control system is used to capture the insects at night. The model's findings demonstrated that the proposed solar-powered insect control trapper effectively get rid of many insect pests and does not affect the environment, and is also inexpensive to use.**

## I. INTRODUCTION

India uses a large portion of its land mass for agriculture. It makes up roughly 60.43 percent of India's total land area. In India, the majority of people rely on agriculture for their livelihood. In the Indian economy, agriculture is also the main source of income. The abundance of rains and rich land creating it perfect for cropping. This has caused the country's vegetation and food crops to grow wildly. India's greatest producer of rice is the state of West Bengal. Other crops than rice include things like other crops grown include jute, sugarcane, fruits, tea, grains, coconut, potatoes, cotton, and areca nuts.

Farmers deal with issues brought on by insects and pests every year since they severely damage the crops. Pest growth can be prevented using a variety of techniques, including physical, mechanical, biological, and chemical ones. Insects, weeds, microorganisms, and rodents can all be killed with or controlled with the help of chemicals known as pesticides. These insecticides frequently have negative effects on the environment, as well as the health of people and animals. Pesticides have the potential to pollute flora, water, and soil. In addition to effectively destroying weeds and insects, it also harms many other aspects of nature, including the soil, water, fish, birds, other beneficial plants, and insects.

Proper crop monitoring at the first sign of pest attack and pest treatment at that point become crucial for solving these issues. In this instance, a Sun Based Pest Trapper is an effective technique. Pest populations can be controlled without the use of harmful pesticides by employing solar radiation to draw pests to a trap. Also, because they don't need upkeep or fuel, solar-powered traps are more economical than conventional techniques. In conclusion, since solar-powered traps don't utilise poison, they are a compassionate solution to control pest populations.

## II. LITERATURE SURVEY

Y. Shen, H. Zhou, J. Li, F. Jian and D. S. Jays, "Detection of Stored-grain Insects using Deep Learning". This paper applied the object detection algorithm, which was based on Faster R-CNN, to detect stored-grain insects under field condition with impurities. The method could detect the insects with slight adhesion.

K. Huang, K. Li, L. Shu, and X. Yang, "Demo abstract: High volt-age discharge exhibits severe effect on zig bee-based device in solar insecticidal lamps internet of things," In the Solar Insecticidal Lamps Internet of Things (SIL-IoTs), when migratory insects with photo tactic feature are attracted by the Solar Insecticidal Lamp (SIL) and collide with its metal mesh, the mesh releases high voltage pulse discharge.

Xu Hao Identification of Tobacco solar pest attracting light and the influence of various factors on its Effect. This research on solar energy-based insect pest traps used common materials like clear acrylic board and electronic mosquito traps that could be customized for pest capturing. After that, an easy-to-learn design was developed for farmers.

## III. PROPOSED SYSTEM

Sun oriented based bother trapper could be a gadget utilized to trap and dispose of bugs without the utilize of destructive chemicals or pesticides. The framework comprises of a sun powered board, a PIC

controller, a Light Subordinate Resistor (LDR) sensor, an LCD, a hand-off and UV light, a hand-off and 12V DC fan, and a hand-off and electric net. The framework is fuelled by a sun based board, which is associated to a PIC controller. The PIC controller is mindful for controlling the operation of the framework. It gets signals from the LDR sensor, which identifies light levels. When the light levels are moo, the PIC controller will enact the hand-off and UV light to pull in the bothers. The UV light will pull in the bugs to the electric net, which is associated to the hand-off and 12V DC fan. The fan will at that point trap the bothers and coordinate them to the electric net, where they will be disposed of.

The LCD is utilized to show the status of the framework, such as the light levels, the status of the hand-off and UV light, and the status of the fan. The framework can be customized to suit the environment and the bothers being targeted. The framework can moreover be set to function on distinctive control levels, depending on the pests being focused on and the environment. The framework can be modified to function naturally, or physically via a inaccessible control.

The framework could be a secure and effective way to induce freed of bugs in an ecologically inviting way. It could be a taken a toll viable way of getting freed of bothers without the use of destructive chemicals or pesticides. The framework is additionally simple to introduce and keep up, making it a incredible choice for utilize in any environment.

The solar based bother trapper may be a profoundly proficient and reliable gadget that can be utilized to induce freed of bothers in a naturally inviting way. With its moo control utilization and simple establishment, the framework may be an extraordinary choice for ranges where there's small or no get to to power. The framework is additionally an extraordinary choice for those who need to urge freed of bothers in an ecologically inviting way, without the utilize of hurtful chemicals or pesticides.

#### IV.SYSTEM ARCHITECTURE

Sun oriented based bug trapper may be a gadget utilized to trap and screen pests using sun powered vitality. It is outlined employing a combination of components such as sun based board, PIC controller, light subordinate resistor (LDR) sensor, Fluid Gem Show (LCD), transfer, bright (UV) light, 12V DC fan and electric net. This framework is outlined to trap the bugs such as rats, mice, and other rodents in a sympathetic and effective way.

The framework starts with a sun powered board that's utilized to capture sun powered vitality and change over it into a usable frame of power. The sun powered board is associated to the PIC controller which is mindful for controlling and controlling the framework. The PIC controller is at that point associated to the LDR sensor which is utilized to distinguish the nearness of pests. When a bug is identified, the PIC controller will trigger the transfer which can at that point actuate the UV light, 12V DC fan and electric net.

The UV light is utilized to draw in the bugs and the 12V DC fan is utilized to blow the bothers into the electric net. This guarantees that the bugs are caught in a sympathetic and successful way. The electric net is at that point associated to the PIC controller, which is capable for checking the caught bugs.

The PIC controller is additionally associated to an LCD, which is utilized to show the state of the framework. The LCD will appear the current status of the framework, such as whether the bother trapper is fuelled on or off, and the number of bugs that have been caught. The LCD too permits the client to control the framework, such as setting the length of the UV light and the speed of the fan.

The Sun oriented based bother trapper is a compelling, productive and sympathetic way to trap and screen bothers. It is furlled by sun based vitality, which is clean and renewable, and it employments a combination of components to guarantee that the bothers are caught in a compassionate and successful way. Moreover, the framework can be observed and controlled through the LCD, which permits the client to customize the framework concurring to their needs.

#### V.METHODOLOGY

Sun powered based bug trapper could be a gadget which works on the guideline of sun oriented vitality to trap bothers. Sun based bug trapper comprises of a sun powered board, a PIC controller, an LDR sensor, an LCD, a hand-off, a UV light, a 12V DC fan, a transfer and an electric net.

In arrange to build the sun based bother trapper, the primary step is to gather the components together. This incorporates wiring the sun oriented board to the PIC controller, joining the LDR sensor to the controller, and interfacing the LCD to the controller. After the components are associated, the following step

is to associate the transfer and the UV light to the controller. Usually done by interfacing the transfer to the digital output pin of the PIC controller and the UV light to the analog output pin of the controller.

The following step is to put through the 12V DC fan and the electric net to the controller. This can be done by interfacing the DC fan to the computerized yield stick of the PIC controller and the electric net to the analog yield stick of the controller.

Once the components are associated, the following step is to program the controller. This can be done by composing a program within the PIC controller's get together dialect. The program ought to incorporate enlightening to identify the nearness of bugs and to enact the UV light and the electric net when bothers are identified.



Fig.1. Kit with Fan and Net

Another step is to test the working of the sun oriented based bug trapper. Usually done by putting the device in an environment with pests and watching the conduct of the gadget. In the event that the gadget is working legitimately, the UV light ought to turn on and the electric net ought to be actuated when pests are detected once the gadget is tried and found to be working appropriately, the another step is to introduce the gadget within the wanted environment. This is often done by mounting the gadget on a divider or other surface and interfacing it to a control source.



Fig.2. Kit with Solar Panel

In conclusion, sun powered based bug trapper could be a gadget which employs sun oriented vitality to trap bothers. It comprises of a sun oriented board, a PIC controller, an LDR sensor, an LCD, a hand-off, a UV light, a 12V DC fan, a hand-off and an electric net. The gadget is modified utilizing the PIC controller's gathering dialect and tried in an environment with bugs. Once the gadget is tried and found to be working appropriately, it is introduced within the wanted environment.

VII.BLOCK DIAGRAM

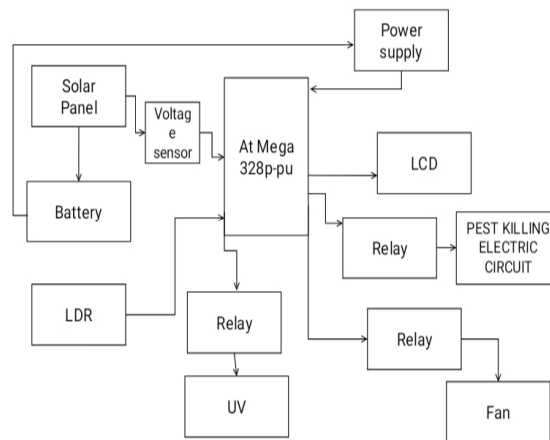


Fig.3. Block Diagram

VIII.FLOW DIAGRAM

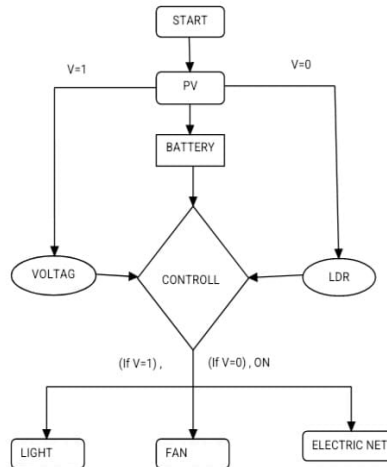


Fig.4. Flow Diagram

### IX.CONCLUSION

A new and sustainable approach to pest management is the Solar-based Pest Trapper. It is effective and environmentally responsible to use solar energy to keep pests out of your house or place of business. In order to attract and capture pests of all sizes and sorts, it uses effective and potent UV light, making it an excellent pest prevention solution. The Solar-based Pest Trapper is an excellent alternative for any house or business because of its simple installation, low maintenance requirements, and lack of ongoing costs.

### RESULT AND DISCUSSION

The effectiveness of the solar-powered pest trapper in lowering the quantity of pests in the region has been evaluated in a variety of settings. The device attracts and traps pests using solar radiation, which lowers their number nearby. It has been discovered that using this strategy can effectively get rid of pests like flies, cockroaches, ants, and mosquitoes. The gadget is also safe for the environment because it doesn't utilise any dangerous chemicals or pesticides.

The effectiveness of the solar-powered pest trapper in reducing pest populations in an area has been demonstrated. Its non-chemical technique is especially advantageous because it lowers the possibility of environmental damage. The device is a cost-effective option because it is simple to install and needs little upkeep. The tool is a flexible pest management solution because it may be applied in both indoor and outdoor settings.

The solar-powered pest trapper could, all things considered, be a useful weapon in the war against pests. In order to properly comprehend its potential and gauge its effects in various situations, more research should be conducted.

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