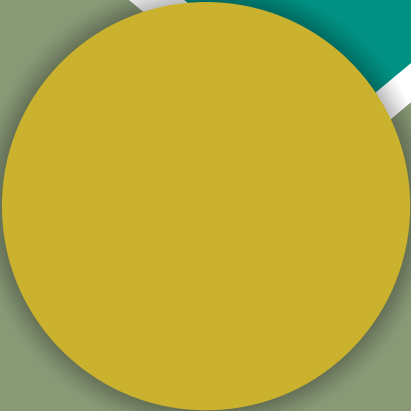


The Light Equipped Power Insect Killer (LEPIK Machine): An Innovative Mechanical Insect Pest Control Machine



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Use of conventional pesticides on edibles is highly damaging especially in the cases of illiterate user and ignorant consumer. People face such problems in under developed countries where mono-cropping systems are in practice. The vegetable growing belts around cities as well as rice, cotton and maize cropping areas of the Indian sub-continent are suffering from this type of problems. Anyway if well informed, human beings can wisely tackle the situation to a certain extent but the local wildlife can't thrive in such a polluted environment. This is why many of the prized wild animals and bird

species have gone extinct and others are facing serious threats in cultivated landscapes where high potency broad spectrum pesticides, artificial fertilizers and other banned chemical products are still in use.

Basic idea of this research effort was to curtail the use of highly toxic pesticides in the agro-ecosystem for the safety of all living beings and as an attempt to meet obligations of WTO to be imposed. This goal can only be achieved if some non-chemical, biological or mechanical methods of pest management are evolved and introduced at a larger scale. The Light Equipped Power Insect Killer (LEPIK machine) is a night operating device, which attracts and kills the insects mechanically. Being environment friendly, this machine has been proved to be safe for human beings and will certainly help in the conservation management of wildlife and the related habitats.

This is well researched fact that insects are attracted toward light (phototropism). Decades ago, this concept led to the development of "Still Light Traps" to be used for insect control in croplands. But soon this technique was discarded because it killed only few of the attracted insects while the rest thronged about the light traps and increased crop losses in the vicinity. The LEPIK machine is actually a movable light trap in which a battery driven sucking unit has been fixed on machine frame at rear side of the operator (See Fig. 1, 2).

A big reflector type light cover (having hole on lower side) fitted with a round shaped ultraviolet (black) tube light is attached to the frame in front of the operator. Hole at the base of light cover is connected with the blower/sucking unit by a flexible rubber pipe (See Fig. 1). During operation at night the powerful black light functions to attract the insects within the light cover. From here insects normally slip into the hole of light cover or sucked in and reach the sucking unit through rubber pipe where these are crushed while passing through high-speed blower. This crushed insect material can be collected for further research by attaching a bag to outlet of the blower. During field operation, flushing of insects slightly ahead the machine was found to give more promising results. This light weight (8 kg) knapsack type device is easy to handle and cheap to operate. Initial results have proved it to be a highly effective device against flying insect pests like flies, moths, beetles, bugs, aphids and white flies including many other chewing and sucking insects. In the insect collection of LEPIK machine, proportion of useful/predacious insects was observed to be less than 2.5 percent. A fully charged dry battery (12V, 18 AH) was found to run the machine for almost 2 hours and can treat as much as three acre large block of cotton at a stretch. Fortnightly operations of LEPIK machine has been observed to give complete control of crop insect pests. Moonlight, temperature and humidity levels were found to affect the efficacy of the device. A tractor operated model of this machine has also been designed and fabricated in the University of Agriculture Faisalabad, Pakistan.

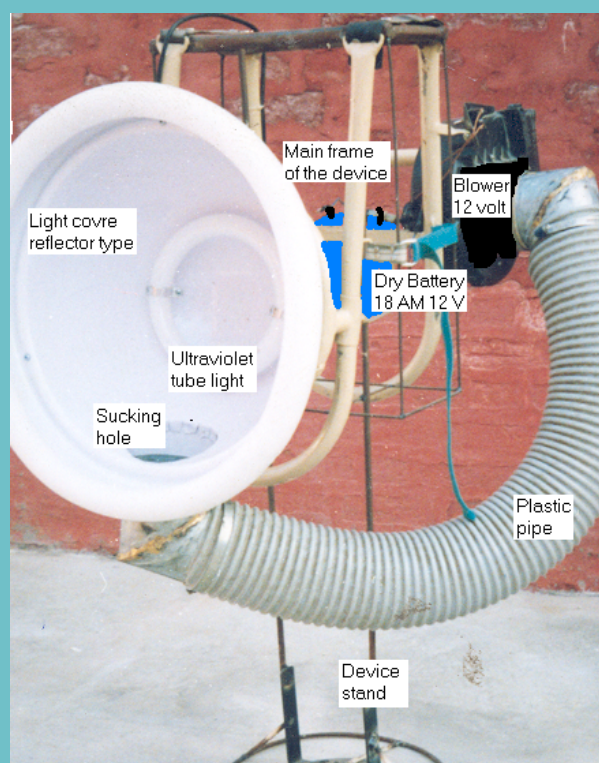


Fig. 1. Knapsack type model of LEPIK machine placed on stand.



Fig. 2. Operator ready to use the machine for insect pest control at night.