

**BuzzZAP**<sup>TM</sup>



**Solar insect killer**

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A MADE IN INDIA PRODUCT

 **LEANWAY ENERGY PVT LTD**

# about our company



## our profile

RENEWABLE  
AGRICULTURE  
RESEARCH  
CONSULTING



## our mission

EVERY  
FARM A  
**BUZZZAP**



## our vision

**ORGANIC INDIA**  
MAKE IN INDIA  
THROUGH  
IMPORT  
SUBSTITUTION

# why BuzzZap

## OTHER STATES

### Insecticide poisoning: 7 more die in three days in Yavatmal

## Wrong spraying practices causing farmer deaths

A devastating attack by whitefly on the cotton crop in Punjab's Malwa region has affected about two-thirds of standing cotton crop in the state. At least 15 devastated cotton farmers have committed suicide.



"Since July, we have sprayed pesticide 10-12 times. Each spray costs about 3,300 per acre. But the whitefly was unaffected."



HEAVY USE OF PESTICIDES AND INSECTICIDES

FARMERS ARE DYING

WE ARE DYING

# our product segments



BuzzZap

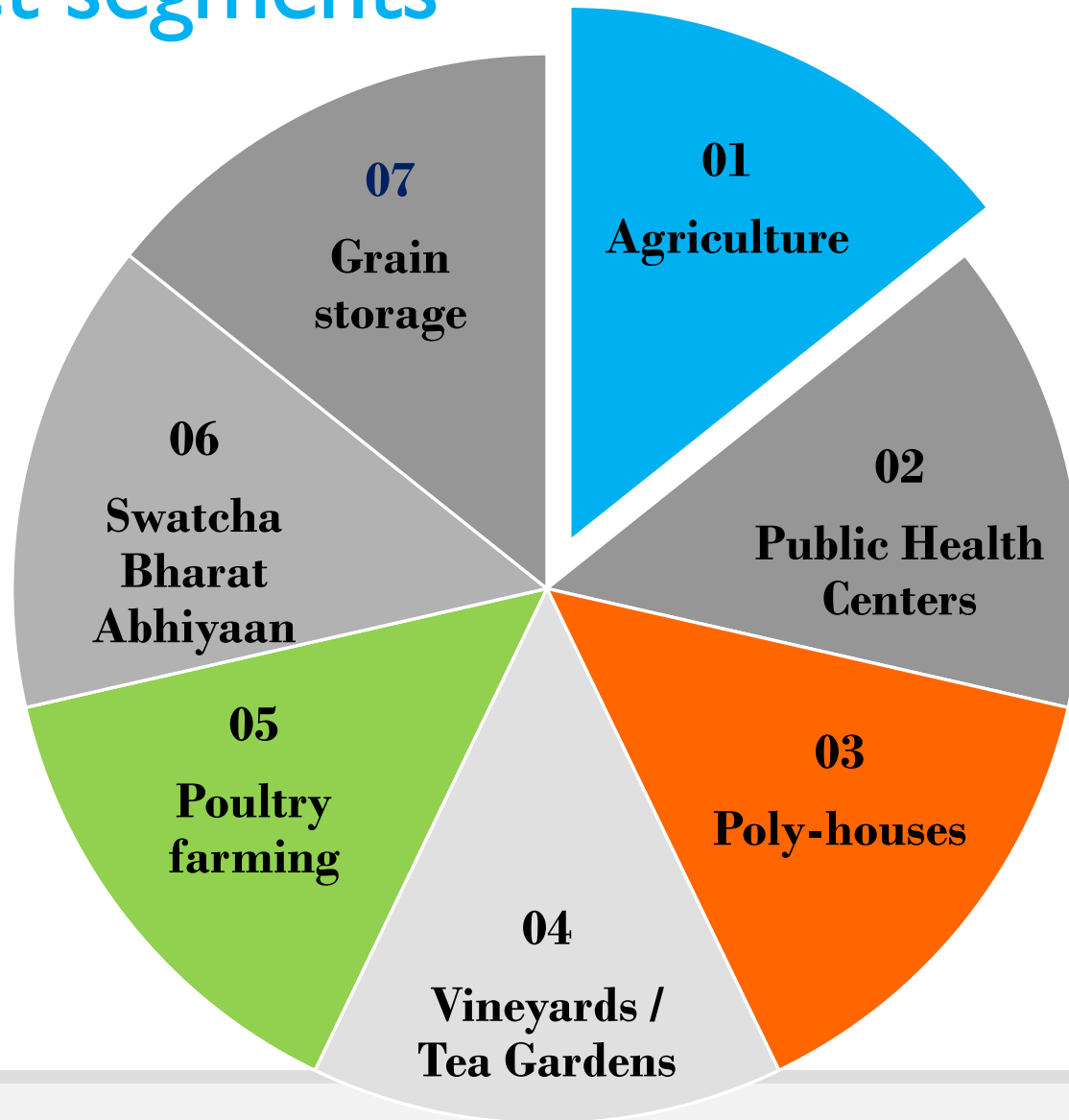
- ❖ Coverage up to 2 Acres
- ❖ Kills all positively phototrophic insects



BuzzZap Mini

- ❖ Coverage up to 1/2 Acre
- ❖ Traps all positively phototrophic insects

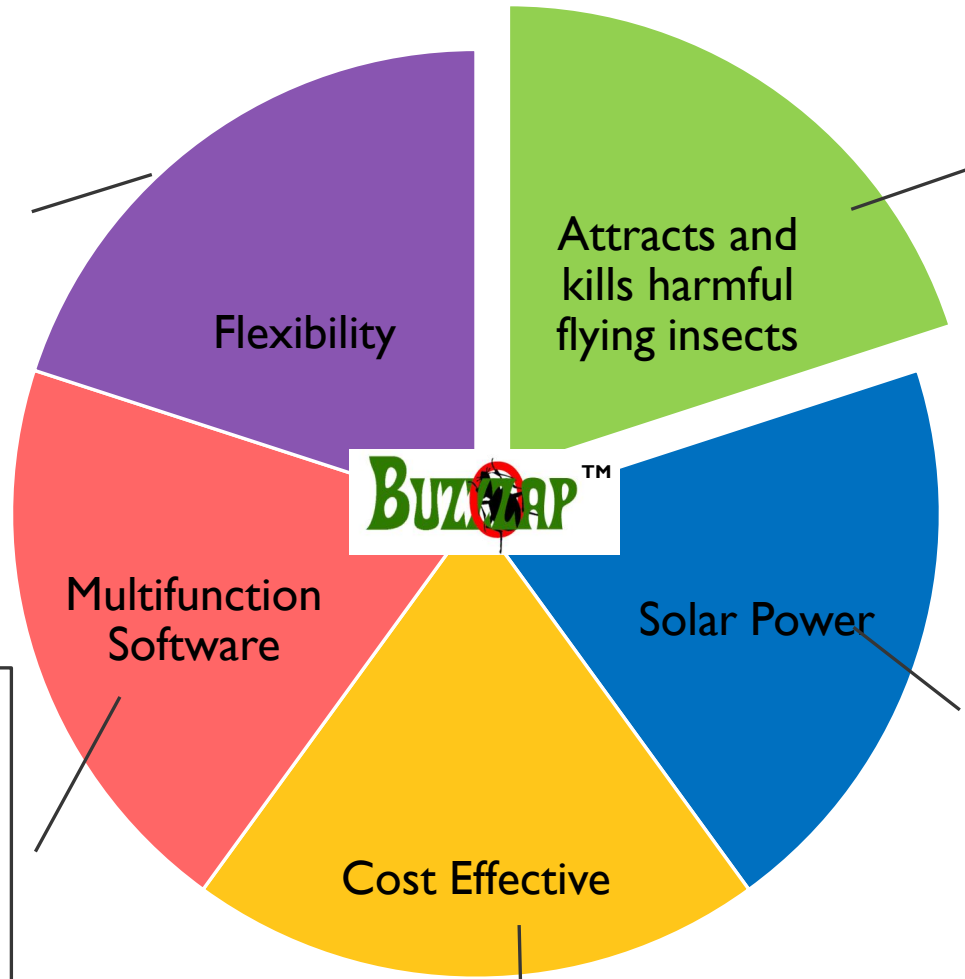
# our market segments



# we deliver solution

BuzzZap will reduce the use of pesticides by up to 50%

Easy install, easy height adjustments.  
Install it Forget it



Motha, white fly, thrips, borer, hoppers, loopers, sucking pests etc

- Auto ON/OFF
- Rain protection
- Battery over charging protection.
- Low Battery Protection.
- Anti theft protection.

No external power required

15% - 20% less than the competition

# the story



Harmful effects of pesticides and insecticides on human body triggered the thought of working in the field of agriculture and support Organic farming through engineering techniques.



Introduction of a low maintenance, stand alone product for farmers helping with organic farming was on our mind.



Immunity of the insects towards pesticides and insecticides is increasing. To find a better alternative was on our minds.



- Can we help the farmers to reduce the expenditure on the use of chemicals ? Can this help the farmer with increase in the crop production ?



With a specific focus on a cost effective, made in India product to help the farmers with the long term solution on insect control we designed the Solar Powered Insect Trap – The BuzzZap

# initial days



Understanding the needs of the farmer was very important. The most important aspect being the lack of power – Solar PV powered insect trap was the solution.



Study of insect behavior on different crops – understanding the enemy and the friend insects, and the timing of attack – ON time calculations along with the time of day was fixed.



Since the BuzzZap ON time was after sun set and for 4 to 6 hours, automatic ON and OFF function was important – The BuzzZap is automatic, install and forget.



- Installation ease – farmers can install this modular system with 20 min. The robust pole and fully integrated The BuzzZap body makes it easy to install.



Spare – after talking to a lot of farmers during demonstration of The BuzzZap, they were concerned about the spares. What happens if something fails – We make in India, our systems are modular, replacement is easy and quick.



# the design



After studying several different products available in the market, we have reverse engineered the most prominent and efficient aspects from each product and incorporated in The BuzzZap.



The UV lamp, one of the critical parts of The BuzzZap was designed with 100s of trials in different farms – Fruits and Vegetables, sugarcane, cotton, rice field etc.



Battery management for long life is very important for solar PV products. MPPT systems have been incorporated for efficient battery charging.



Our wire mesh / insect trap mesh is designed to so that none insects stick to the mesh, keeping the mesh clear all time for new insects to be trapped.



Farmers after a hard working day, wouldn't want to return back for switching the insect trap On or Off. So, we designed an auto ON / OFF function.

# how the BuzzZap works



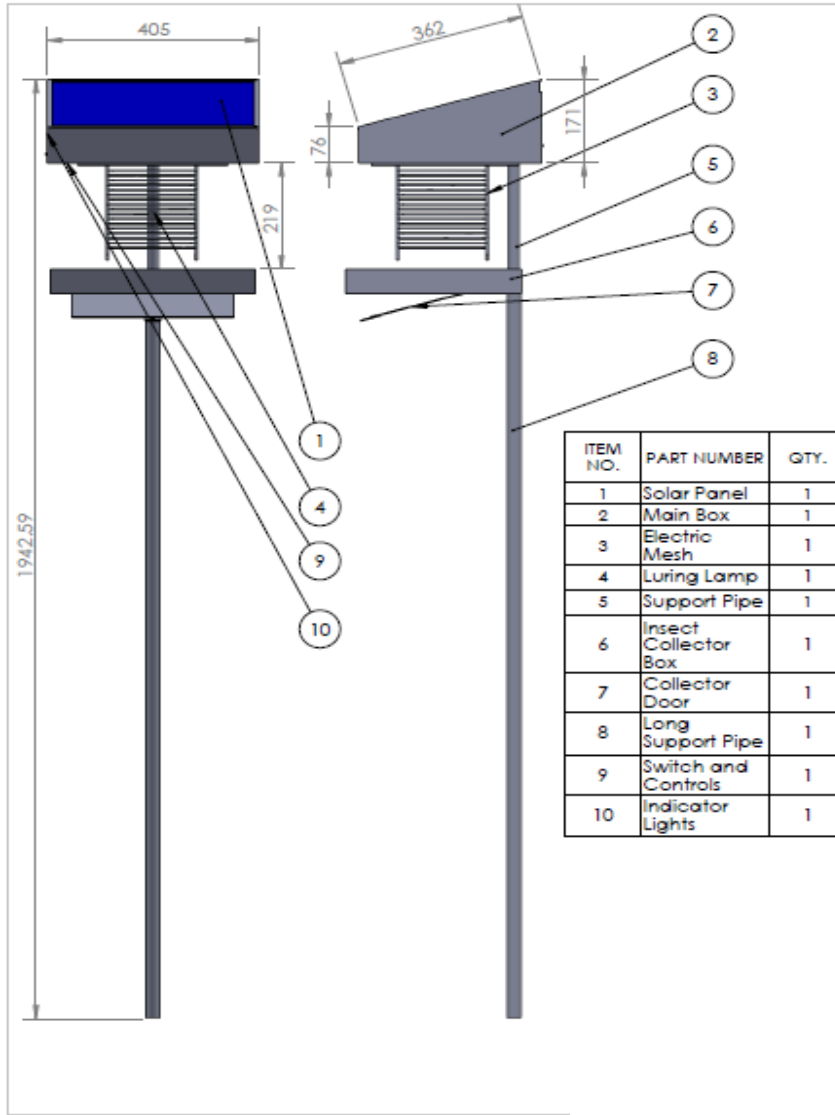
🚰 The most popular theories holds that positively phototactic insects are drawn to lights because they act like a navigational guide. Many insects find their way by keeping a natural light source, such as the Sun or the Moon, at a constant angle.

🚰 Using the same principle we designed a UV light with a frequency that attracts more than 1800 different flying insects.

🚰 The insects tend to cross the electric wire mesh around the UV light and get electrocuted.

🚰 With the use of Solar PV panel to charge the battery inside The BuzzZap, a high tech electronic high voltage circuit is used for functioning of the system.

# how the BuzzZap works



- 🚰 Easy installation .
- 🚰 Push the pipe in the ground, 1 foot below.
- 🚰 Place the main box on the pipe.
- 🚰 Adjust the height.
- 🚰 Push the start button and

**FORGET IT**

# Crops and insects



## Insects that are attracted and killed

### Main Target Harmful Insects >> Rice Paddy Fields, Health Care, Livestock barn

Name	Occurrence (Generation)	Photo1	Photo2	Crops / Features
Leafhoppers	Jun ~ Sept			<p><b>Crops :</b> Rice</p> <ul style="list-style-type: none"> <li>- Flying in from South China, Indo-china on the middle part of June and living 2nd/3rd generations in Korea</li> </ul> <p><b>Damage :</b> Hopper burn</p> <p>▶ <b>Trap Application :</b> Middle ~ Last Jun.</p>
Leaf folder	Jun ~ Sept			<p><b>Crops :</b> Rice</p> <ul style="list-style-type: none"> <li>- Flying in from South China, Indo-china on the middle part of June</li> </ul> <p><b>Damage :</b> Meiotaxy, Biting Chlorophyl parts</p> <p>▶ <b>Trap Application :</b> Middle ~ Last Jun.</p>
Chilo suppressalis	Jun ~ Aug			<p><b>Crops :</b> attacking the stems of rice and develops "white head"</p> <p>▶ <b>Trap Application :</b> Middle ~ Last Jun</p>
Fungus gnat	Twice / month			<p><b>Crops :</b> Organic vegetables like mushrooms in a cultural arena</p> <p><b>Damages :</b> An Imago bears 100~300 eggs ,attacking the roots and withering them.</p> <p>▶ <b>Trap Application :</b> right after propagation</p>

# Crops and insects




## Insects that are attracted and killed

### Main Target Harmful Insects >> Orchard, Forest




Name	Occurrence (Generation)	Photo1	Photo2	Crops / Features
Peach Carposinidae	Jun ~ Jul Aug~ Sept (1 ~ 3 times)			<b>Crops</b> : Peach, Apricot, Plum, Apple, Pear Making a small holes on the surfaces of the fruits rather than the stems, and lays eggs Mostly its larvae does harm to the fruits ▶ <b>Trap Application</b> : Season to bloom & bud
Peach Oriental Fruit Moth	Apr. Mid~May Jun. Middle Jul. Last ~ Aug. First Aug. Last ~ Sept. First (4 ~ 5 times)			<b>Crops</b> : Peach, Apricot, Plum, Apples, Pear etc. It produces eggs on the under side of leaves, entering into the new leaf buds and lives there, doing harm to the fruits. ▶ <b>Trap Application</b> : Season to bloom & bud
Peach Pyralid Moth	As being a larva, wintering inside cocoon 1st : Jun. Emergence 2nd : Jul. First~Aug. Last			<b>Crops</b> : Peach, Cherry, Apples, Plum, Persimmon, Mandarin, Chestnut, Corn, Cotton, Sunflower, Pine tree etc. ▶ <b>Trap Application</b> : Season to bloom & bud
Persimmon Fruit worm	May First - Pupa May Last - Adult Twice / year Wintering inside cocoon			Jun. First 1st Emergence - Peak Season Aug. First 2nd Emergence - Peak Season A larva penetrates into the apple ▶ <b>Trap Application</b> : Season to bloom & bud

# Crops and insects



 Insects that are attracted and killed

## Main Target Harmful Insects >> Green House Fruits/vegetables, Flowers

Name	Occurrence (Generation)	Photo1	Photo2	Crops / Features
Tobacco cutworm	1st Gen ~ May First 2nd : Jun. Middle 3rd : Jul. Last 4th : Aug. Last 5th : Sept. Middle			<b>Crops :</b> Greenhouse, Outdoors vegetables, Flowers 5 Generation occurs through the year. A larva bites the plant, 100~300 eggs (egg mass) 4th instar is the most damaging period ▶ <b>Trap Application :</b> Early stage of propagation
Beet armyworm	4 Times per year May ~ Oct. Adult Insects			<b>Crops :</b> Greenhouse, Outdoors vegetables Occurs in Greenhouses all year around It lays 50~150 eggs (a mass of eggs) ▶ <b>Trap Application :</b> Early stage of propagation
Oriental tobacco budworm	2 ~ 3 times			<b>Crops :</b> Chili pepper, Tomatoes, Eggplant, Squash, Green pepper, Paprika May~Jun. Adult & in the pupal stage in Sept ~ Oct ▶ <b>Trap Application :</b> Early stage of propagation
Diamond Back moth	8 ~ 12 times			<b>Crops :</b> Chinese Cabbage Aug.~Sept. massively occurs ▶ <b>Trap Application :</b> Early stage of propagation

# some happy farms

Brinjal & Cauliflower

“BuzzZap – Solar Powered insect Trap was installed in our farm 6 months ago. Major insects that use to harm the crop have been successfully irradiated due to the use of insect trap. excellent results, I have seen a savings of up to 40% in the use of chemical pesticides and insecticides “Mr. Arun Patil, farmer from Haroli, Dist Kolhapur, Maharashtra.

## Insects killed by the BuzzZap



**Kills the adults and breaks the reproduction cycle**

Brinjal shoot & fruit borer



Leafhopper



beetle



# some happy farms

## Pomegranate

Mr. Vijay Chougule a farmer from Sangola, Solapur, Maharashtra discussed the to control the pests / insects that has been destroying the crop. We have installed the BuzzZap in his field which has not only reduced the insects to a great extent but also have reduced the need to spray pesticide resulting in a healthy produce.

### Insects killed by the BuzzZap

Sl. No.	Name of pest/ disease
1	Anar Butterfly
2	Stem boring beetles
3	Mealy bugs
4	Thrips
5	Aphid
6	Fruit borer
7	Powdery mildew





# some happy farms

Grapes  
5 Kin g Catchers installed in Sangli in a 15 Acre grape farms have reduced the use of insecticides by 50%. Farmers are happy as they have qualified for exports of the grapes. The produce is shown improvement in output with a 20% reduction in wastage.

## Insects killed by the BuzzZap

- |                                      |
|--------------------------------------|
| 1. Leaf eating caterpillar           |
| 2. Mealybugs                         |
| 3. Mites                             |
| 4. Thrips                            |
| 5. Grape leaf folder                 |
| 6. Girdle beetle/grape cane girdler: |
| 7. Flea beetle                       |
| 8. Rose chafer beetle                |
| 9. Grapevine stem borer              |
| 10. Root-knot nematode               |



# some happy farms

Tomato, Capsicum etc - Veggies

Farmlands in the Narayangaon area are famous for tomatoes, grapes and other vegetables. Mr More, educated and a modern farmer introduced BuzzZap in his farm. He is already using different techniques of organic farming to reduce the use of pesticides and insecticides. With the of solar insect trap, he was able to add to the organic farming .

## Some installations



# some happy farms

## Tea Garden – Assam

Tea gardens in upper Assam are famous all over the World. Organic tea is making news and therefore Tea growers small and large are looking for organic ways to cultivate the tea plantation for which the price per Kg is 4 times the normal selling price of tea. Mr Nayanji Kalina installed the BuzzZap in his tea garden and is very happy.



Tata Organic tea garden

# project showcase



any produce  
any farm



BuzzZap  
will do

Deadly insects  
harm



# poultry farms

## Sangarun Poultry farm

BuzzZap is installed in one of the poultry farms near Pune, The issues that the owner discussed was about the bugs and house fly. They have tried the conventional methods and have not been successful in reducing the attack of the insects. With the installation of BuzzZap, they have seen a reduction to more than 75% in the flying insects.

- ❖ House Fly
- ❖ Little House Fly
- ❖ Black Garbage Fly
- ❖ Lesser Mealworm
- ❖ Hide Beetle
- ❖ Chicken Mite
- ❖ Bed Bug



# polyhouse

A special product for poly houses is developed by LWE. Generally, power being the basic necessity for poly-houses, BuzzZap can work on AC power from the grid. There is an option provided for solar charging where the Solar panel is installed out of the poly-house.



# Product Composition

Sr No	Item	BuzzZap Solar Trap	Chinese Solar Trap
1	Operation method	DC generated by solar panel	DC generated by solar panel
2	Trapping System	- Light if requirement attachment - Trapping net	Light Only + Trapping cage / Water pan + chemicals
3	Capacity of solar panel	-18w High inefficiency poly crystalline solar cells - 350 mm X 395 mm - cloudy : 40 % charge	Regular solar cells 750x540x25mm DCE : 12wx5hx50%=30w Cloudy : 10% charge
4	Lamp	- Fluorescent Lamp (Blue & Purple Light Color) - 6 watts - Special purpose	11 watt regular UV lamp
5	Electric consumption / Hour	- Rated consumption 15 watt - Stand by consumption 7 watt	20 watt
6	Controller & Battery	- Battery over charge protection. - Battery deep discharge protection. - Low battery protection. - Rain protection.	Low Battery protection
7	Battery	- 7.2 Ah 12v SMF - Battery 1 Year Warranty	6 v – 4.5 Ah x 2 No any Warranty
8	Weight & package	- Weight(net) : 15 kg - BOX packing : easy delivery	Weight(net) : 15 to 20 kg
9	Assembly & keeping	- Easy assembly by user at the field - Easy moving, disassembly, keeping, etc.	Easy assembly by user at the field
10	Working Time	- After Sunset 3 to 4 Hour 365 days / Per year	After Sunset 3 to 4 Hour daily
11	Design	- Spicily Designed at Indian climate condition	No any Special design
12	Life & Service	- 10 Years With proper care - Easily Available service.	5 Years with maintenance Use and through

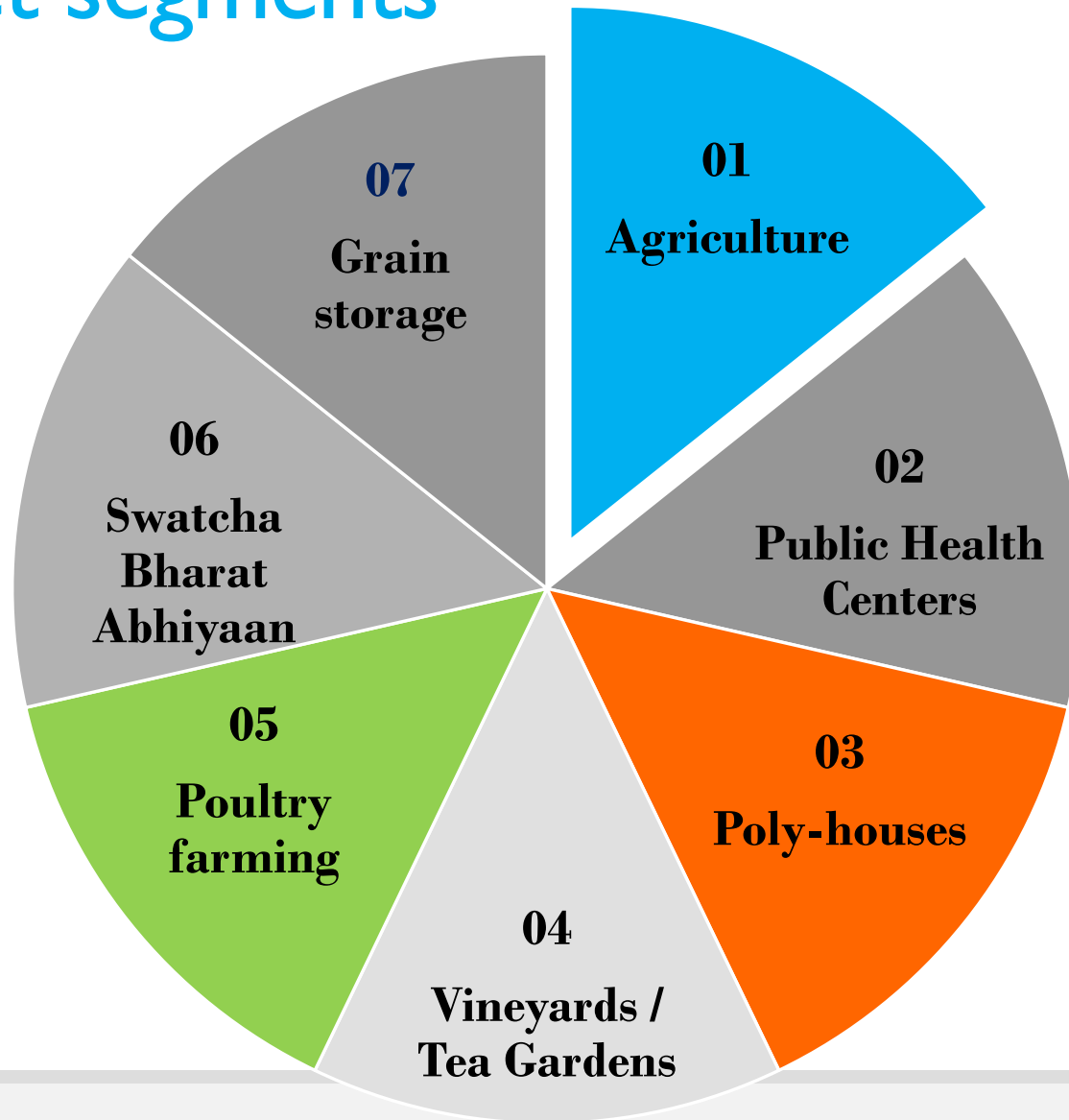
# our competition



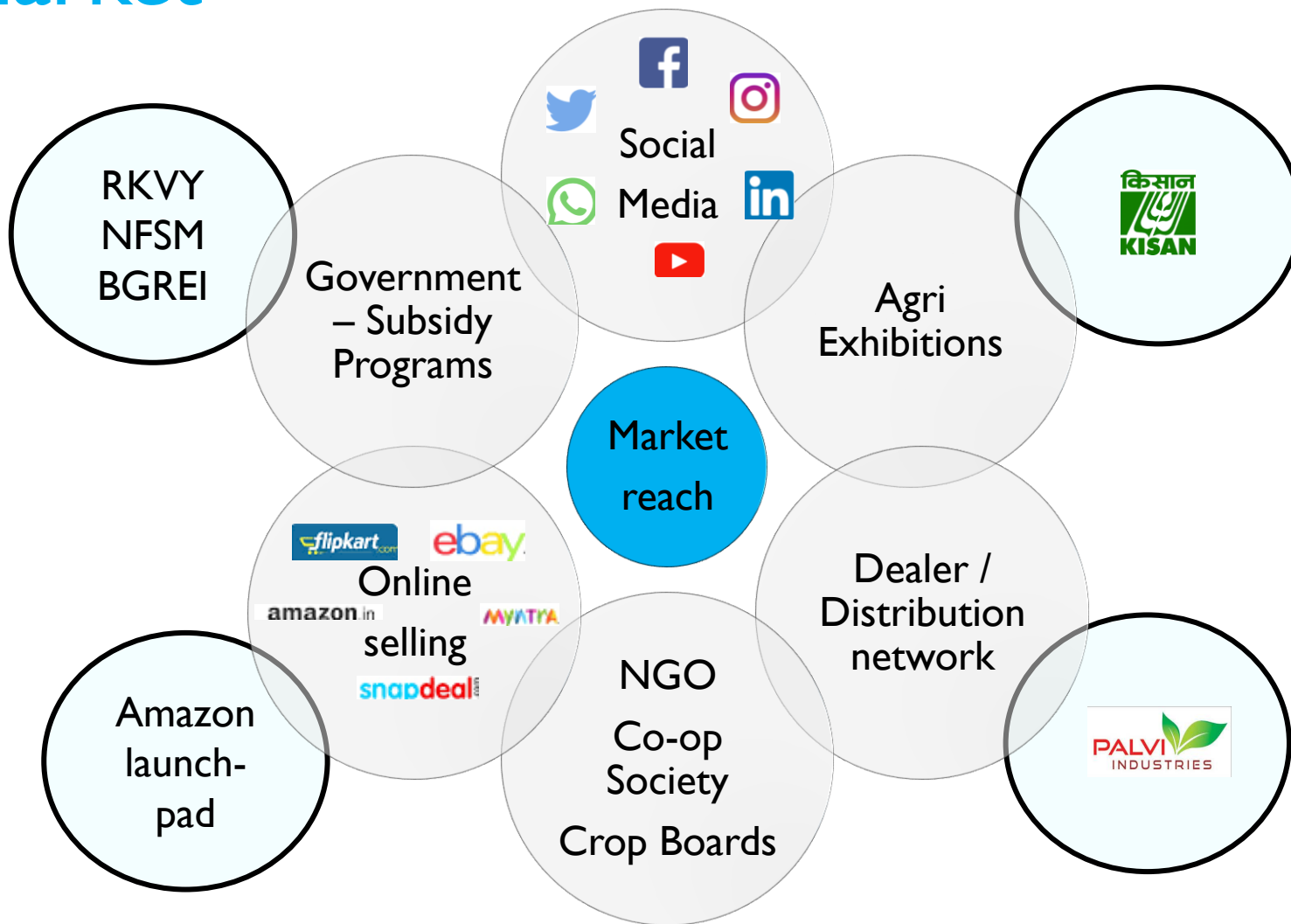
Product Comparison	BuzzZap	Other Indian Product	Imported Product
Cost	😊	😊	😡
Range of attack	😊	😡	😊
Ease of operation	😊	😡	😊
Spares availability	😊	😊	😡
Product range	😡	😡	😊
Life	😊	😡	😡



# our market segments



# go to market



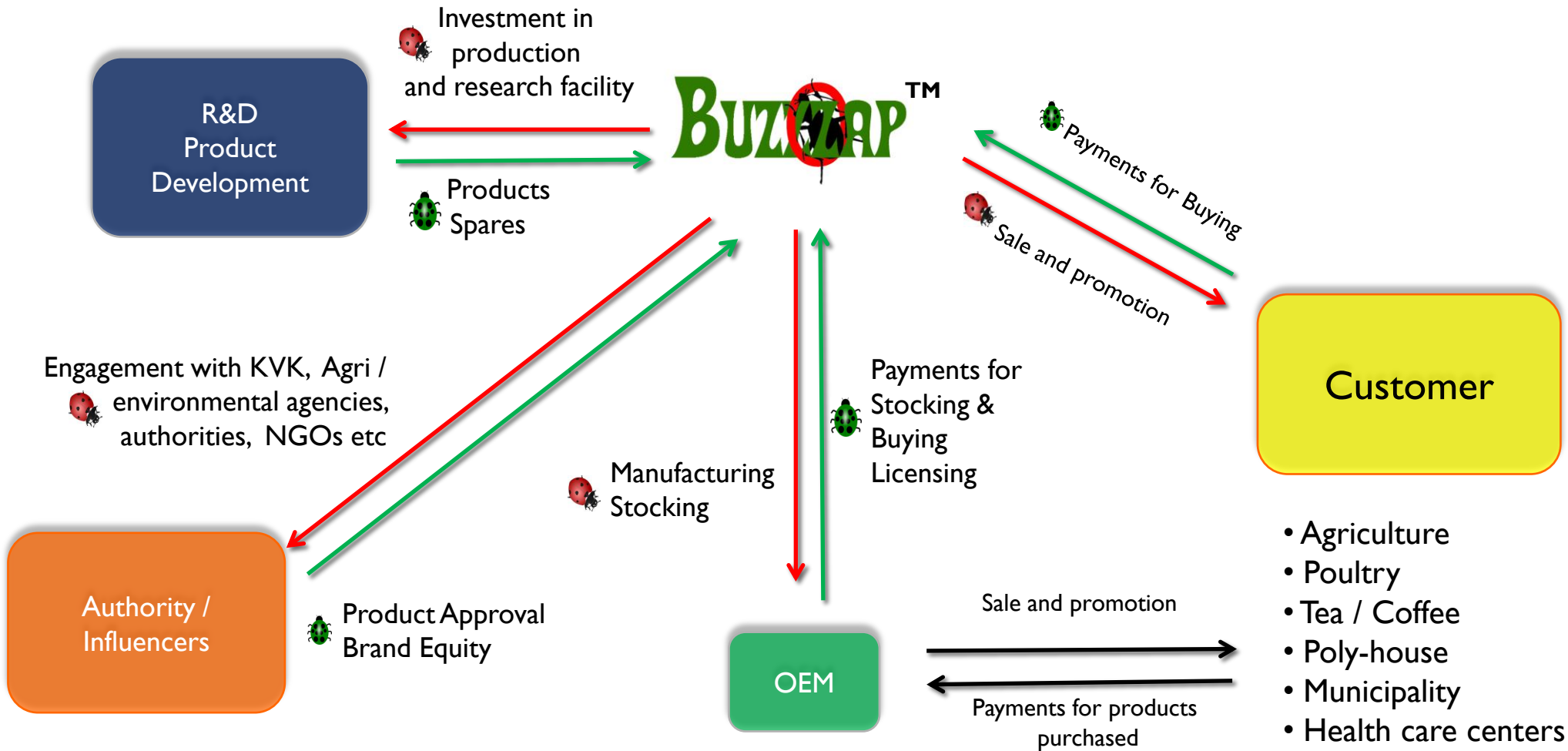
# revenue model



Revenue



Cost Element



# Buzz momentum



Samalkot – demo unit



AMALGAMATED  
PLANTATIONS

Assam – demo unit  
TATA TEA



Almatti – demo unit

**Tonganagaon Tea Co. Pvt. Ltd**

**Sycotta Tea Co. Pvt. Ltd**

# Buzz team



**Pravin**

**Product Development**

8+ yrs experience in electrical and electronics



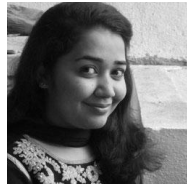
**Shrirang**

**Manufacturing and management**

17+ yrs experience in manufacturing, general management.

M.S Industrial Engineering, USA

Six Sigma Black Belt - ASQ



**Tejas**

**Application Engineer**

5+ yrs experience in Engineering  
B.E - Instrumentation



**Ketki**

**Accounting and Tax**

15+ yrs experience in Accounting  
CPA, Michigan State - USA

## Buzz Advisors



**Sudarshan  
Herle**



**Nitin  
Pangam**



**Prof .Kaulgud**

# TEST REPORT – KVK DAPOLI

## LIGHT TRAP EVALUATION REPORT

Name of the product	: Solar light trap- ( <b>King Catcher</b> )
Name of the manufacture	: M/s Palavi Industries, Sangli, Maharashtra
Season	: <i>Rabi</i> - 2017-18
Scientist and other workers associated with the light trap trial	: Dr. S.K. Mehendale, Professor, and Dr. M.S. Karmarkar, Assist. Professor

### Methodology:-


Solar light trap (**King Catcher**) given by M/s. Palavi Industries Sangli, Maharashtra (Model as shown in the Photos) was installed about 3 ft from crop height in botany farm having various crops like Dolichus bean, Cowpea, Green gram, Cucumber, Groundnut and Brinjal on December 17<sup>th</sup>, 2017 as per protocol given. Different insects attracted were observed daily in this light trap. The same were further grouped in to different orders and their number was recorded accordingly. Trap catch of one month was recorded.

### Results:-

The data on the insect catch are presented in **Table1**. Data revealed that insects recorded were from seven major orders viz., Lepidoptera (moths), Coleoptera (Beetles), Diptera (various Flies), Hymenoptera (various wasps), Hemiptera (Bugs, leaf hoppers), Orthoptera (Grass hoppers and field crickets) and Dermaptera (Ear wigs). Among them, Order Lepidoptera recorded maximum number of insects (**833**) within a period of one month followed by Coleoptera (**333**), Hymenoptera (**135**), Orthoptera (**113**), Hemiptera (**70**), Diptera (**61**) and Dermaptera (**28**). This catch clearly indicated that the light trap is useful in attracting major order Lepidoptera which consists of generally the most of the crop pests belonging to various crops.

### Conclusion:

The data on insect catch clearly indicated that the Solar light trap (**King Catcher**) is an effective device in monitoring and mass trapping various positively phototrophic insects belonging to different orders and also from different crops. Further, based on the results it can be concluded that the Solar light trap technology based on natural energy resource is, Eco friendly which, can be adopted on community basis. Such type of light trap would be one of the effective components of IPM in various crops.

  
**Professor**  
 Department of Agri. Entomology  
 College of Agriculture, Dapoli

  
**Assistant Professor**  
 Department of Agri. Entomology  
 Dr. B.S. Kankar Kistai Vidyapeeth  
 Dapoli, 415712

## LIGHT TRAP EVALUATION REPORT

Name of the product	: Solar light trap- ( <b>King catcher mini</b> )
Name of the manufacture	: M/s Palavi Industries, Sangli, Maharashtra
Season	: <i>Rabi</i> - 2017-18
Scientist and other workers associated with the light trap trial	: Dr. S.K. Mehendale, Professor, and Dr. M.S. Karmarkar, Assist. Professor

### Methodology:-

Solar light trap (**King Catcher mini**) given by M/s. Palavi Industries Sangli, Maharashtra (Model as shown in the Photo) was installed about 3 ft from crop height in botany farm having various crops like Dolichus bean, Cowpea, Green gram, Cucumber, Groundnut and Brinjal on December 17<sup>th</sup> 2017 as per protocol given. Different insects attracted were observed daily in this light trap. The same were further grouped in to different orders and their number was recorded accordingly. Trap catch of one month was recorded.

### Results:-

The data on the insect catch are presented in **Table1**. Data revealed that insects recorded were from seven major orders viz., Lepidoptera (moths), Coleoptera (Beetles), Diptera (various Flies), Hymenoptera (various wasps), Hemiptera (Bugs, leaf hoppers), Orthoptera (Grass hoppers and field crickets) and Dermaptera (ear wigs). Among them Order Lepidoptera recorded maximum number of insects (**482**) within a period of one month followed by Coleoptera (**492**), Hymenoptera (**226**), Dermaptera (**190**), Orthoptera (**144**) Hemiptera (**62**) and Diptera (48). This catch clearly indicated that the light trap is useful in attracting major order Lepidoptera which consists of generally the most of the crop pests belonging to various crops

### Conclusion:

The data on insect catch clearly indicated that the Solar light trap (**King Catcher**) is an effective device in monitoring and mass trapping various positively phototrophic insects belonging to different orders and also from different crops. Further, based on the results it can be concluded that the Solar light trap technology based on natural energy resource is, Eco friendly which, can be adopted on community basis. Such type of light trap would be one of the effective components of IPM in various crops.

  
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 Dapoli, 415712

\* BuzzZap and King Catcher are both manufactured by LeanWay Energy Pvt Ltd

# Design Registration

 ORIGINAL  
No. 58269

  
सत्यमेव जयते  
भारत सरकार  
GOVERNMENT OF INDIA  
पेटेंट कार्यालय  
THE PATENT OFFICE

**CERTIFICATE OF REGISTRATION OF DESIGN**

Design No. 296346  
Date 02/08/2017 14:39:10  
Reciprocity Date\*  
Country

Certified that the design of which a copy is annexed hereto has been registered as of the number and date given above in class 22-06 in respect of the application of such design to INSECT TRAP in the name of SHRIRANG CHANDEKAR OF S, SNEH AVISHKAR, 72/1 ERANDWANE, LANE 15, PRABHAT ROAD, PUNE - 411004, MAHARASHTRA, INDIA. NATIONALITY: INDIAN

in pursuance of and subject to the provisions of the Designs Act, 2000 and the Designs Rules, 2001.

  
Controller General of Patents, Designs and Trade Marks

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Copyright in the design will subsist for ten years from the date of Registration, and may under the terms of the Act and Rules, be extended for a further period of five years.  
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411004, MAHARASHTRA, INDIA

Date of Issue 22/09/2017 14:44:47

  
सत्यमेव जयते  
GOVT. OF INDIA  
MINISTRY OF NEW AND RENEWABLE ENERGY

**CERTIFICATE OF EMPANELMENT**  
as  
**CHANNEL PARTNER (NEW ENTREPRENEUR)**  
AWARDED TO  
**M/S LeanWay Energy Private Limited**  
( Registration No. : U40108PN2010PTC135760 )  
Under  
**Grid Connected Rooftop and Small Solar Power Plants Programme**  
Empanelment Number : MNRE/EN/GCRT/1938

Date of Empanelment : 13-12-2016  
Valid upto : 13-12-2018

  
SCAN QR Code

Please verify the authenticity from [DPII.in](http://DPII.in) or [mnre.gov.in](http://mnre.gov.in)

  
Dr. G. Prasad  
Senior Director  
Authorized Signatory  
Grid Connected Rooftop and Small  
Solar Power Plants Programme

# a story of a happy farmer



जय हिन्द जय किसान