OFFICIALLY ENDORSED BY

UNITED ARAB EMIRATES
MINISTRY OF CLIMATE CHANGE
& ENVIRONMENT

الإمارات العربية المتحدة
وزارة التغير المناخي
والبيئة

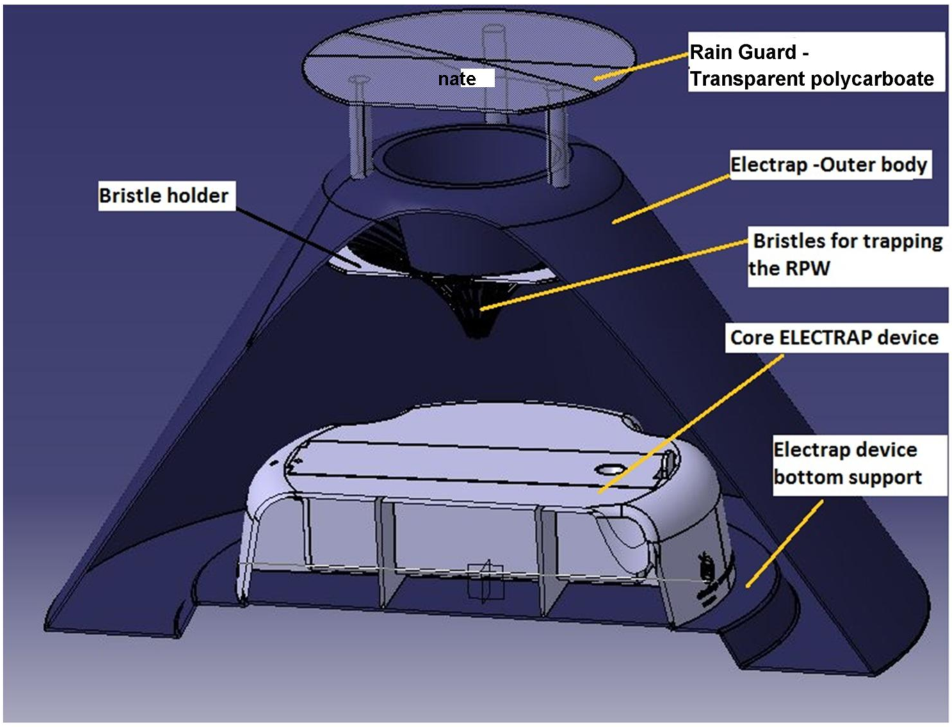
2016 AWARD WINNER at

agra ME

Best New Product for the Middle East Market – Agriculture

electrap

RED PALM WEEVILS
FINAL SOLUTION



FUTURE INNOVATION RIGHT SOLUTIONS TECHNOLOGIES UNITED ARAB EMIRATES

Future Innovation Right Solutions Technologies
AFZ Licence n. 10047 | UAE
P.O. Box 33314 Abu Dhabi
Tel. +971 56 633 6308 | Skype: uaefirst_support
electrap@uaefirst.com | www.uaefirst.com

INDEX

UNITED ARAB EMIRATES
MINISTRY OF CLIMATE CHANGE
& ENVIRONMENT

الإمارات العربية المتحدة
وزارة التغير المناخي
والبيئة

Award Winner

ELECTRAP

by

First – Future Innovation Right Solutions Technologies

was presented the

Best New Product for the Middle East Market – Agriculture

at

AgraME | AquaME

AWARDS
2016

EUROVETS
VETERINARY SUPPLIERS

informa
exhibitions

electrap
RED PALM WEEVILS
FINAL SOLUTION

THE BACKGROUND

FIRST (Future Innovative Right Solutions Technologies, UAE) has developed a revolutionary trap for the Palm Red Weevils (*Rhynchophorus Ferrugineus*-RF), severely affecting palm tree and dates industry.

The red palm weevil (RF) invaded the Gulf States in the mid-1980s, and has caused havoc with date plantations ever since. The beetle-like weevil is widely found in southern Asia and Melanesia where it is a well known threat to coconut plantations as well as date palms. The weevil expanded its territory westwards very rapidly.

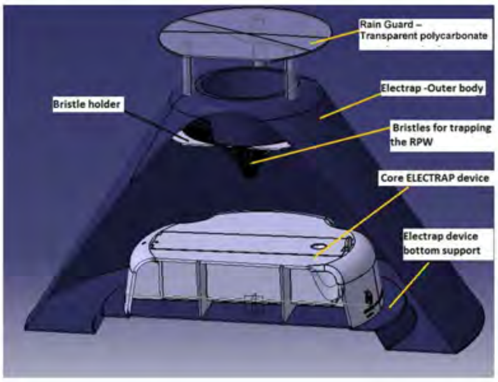
The pest was recorded for the first time in the United Arab Emirates in 1986, Saudi Arabia in 1987 and in Iran in 1992. It crossed the Red Sea into North Africa and by 1995 it had infested over 10,000 farms across Arabia. In infested plantations, yields have been estimated to have dropped from 10 tonnes to 0.7 tonnes per hectare, according to the Food and Agricultural Organisation (FAO). And the situation is going worst and worst, despite the already started campaigns.

After decades of disappointing results, pheromone and kairomone traps haven't performed up to their original expectations. They're not overly effective and may only capture 10 to 25% of the insects in a given area, based on anecdotal information. As a result, pheromone and kairomone traps have been downgraded from insect management devices to insect monitoring devices.

If traps were made to be more effective, their market value would increase and alternative control measures (such as repellent spraying) could be reduced or eliminated. In order for this to happen, insect trap efficacy would have to increase dramatically.

Specifically aiming to your worst enemy: the Red Palm Weevil!

ELECTRAP® GENERAL OVERVIEW



THE MAIN CONCEPT

A literature review turned up no evidence whatsoever that physical contact ever occurred between the scent (i.e. an insect pheromone and kairomone) and the purported receptors (odorant receptor proteins found on the dendritic membranes). Instead, detection might be occurring at a distance which suggests electromagnetic effects may be mediating this whole process. Therefore, vibrational frequencies became the prime candidate for an alternate theory.

If these vibrational frequencies are involved, then theoretically, smell can be both amplified and squelched. Both of these phenomena have been successfully demonstrated in the laboratory, and ELECTRAP® capitalizes on the former.

Specifically, the breakthrough discovery revealed that placing a scent in a highly reflective cavity resulted in heightened activity among Palm Red Weevils.

Over 4,000 experiments have been completed to date, and the surprising results are telling us that the **efficency is increased more than 300% whilst the management cost is reduced by more than 50%.**

In fact, as a matter of an example, the pheromone and kairomone lures last for lengthily periods of time. There's no need to replace the pheromone and kairomone lures according to manufacturer's recommendations.

Moreover, also if ELECTRAP® should be cleaned periodically as the level of infestation warrants, the trap is still highly effective without meticulous cleaning.

The ELECTRAP® is considerably more sensitive than the standard traps on the market. We can make an immediate impact upon a particular infestation, and over a few short seasons can exercise complete control. In addition to being highly effective, our trap differs from all other RW traps currently on the market.

The ELECTRAP® doesn't use insecticides. It doesn't have to be handled with protective gloves.

The Red Weevil pheromone and kairomone is commercially available and can be purchased as a separate pheromone and kairomone lure. It can take different forms. Any of these forms can be used in ELECTRAP with full effect.

ELECTRAP key issues

- **Efficiency**
  - The **market traps attract approximately 13% of the Red Weevils** under laboratory conditions.
  - Under the same conditions, **our traps capture over 80%**.
- **Inexpensiveness**
  - Based on five years timeframe, **the global cost of a traditional system is more expensive than an ELECTRAP system in reason of almost 170%**. And the lifespan of a well maintained device is more than 10/15 years…
  - Due, inter alias, to the overcoming of the necessity of water provision, the needed manpower for maintenance is dramatically reduced by, at least, 60%,
  - Pheromone and kairomone lures will last up to a year in our trap with virtually no loss in efficacy.
- **Safety**
  - Chemical control is expensive, it can be dangerous, and it's quickly losing favour with a public that is demanding chemical-free food.
  - The ground swell of public sentiment is driving the organic industry, and the organic industry is now affecting the stored grain industry.

Our trap is the answer to your problems. Let us work together to severely reduce or eliminate Red Palm Weevils.

Contact us and let us know how we can help your business.

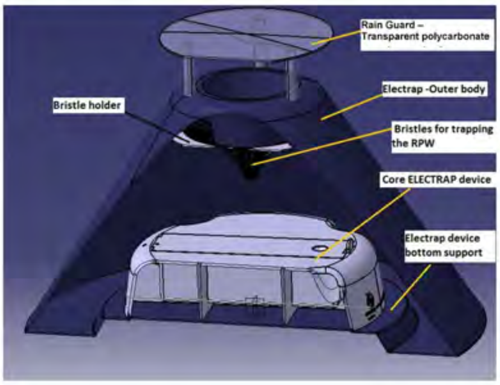
ELECTRAP® will give you many years of worry-free use. Happy trapping!

electrap

RED PALM WEEVILS

FINAL SOLUTION

ELECTRAP® GENERAL OVERVIEW



Red Palm Weevils Behavioral Control Systems

assessed by

Professor Walid Kaakeh PhD

- Ph.D. in Entomology, Virginia Polytechnic Institute & State University (Virginia Tech)
- M.S. in Entomology West Virginia University, USA
- B.Sc. in Agriculture Aleppo University, Syria
  - ◊ Global Experts, General Director & Senior Consultant
  - ◊ Entec Europe, UAE Environmental Consultant (Pest Control)
  - ◊ UAE University, UAE Professor of Entomology & Pesticide Toxicology
  - ◊ UAE University, UAE Associate Professor of Entomology. & Pesticide Toxicology
  - ◊ UAE University, UAE Assistant Professor of Entomology. & Pesticide Toxicology
  - ◊ Purdue University, USA Manager of Sponsored Product Research
  - ◊ University of Georgia, USA Post-Doctoral Research Associate
  - ◊ Virginia Tech, USA Post-Doctoral Research Associate

Future Innovation Right Solutions Technologies

electrap@uaefirst.com | www.uaefirst.com

Global Experts

جلوبال اكسبرتس

Environmental and Agricultural Consultancy & Training

للتدريب والاستشارات الزراعية والبيئية

No. GE/WK/2015/7-8
Date: 9th July 2015

Dr. Luigi Porcella PhD
Founding Partner – Chairman UAE FIRST
Suite 508 - The Fairmont - Sheikh Zayed Road
Dubai, UAE

Subject: Field Evaluation of Semiochemical (Pheromone + Kairomone) Traps against the Red Palm Weevil (RPW) in UAE - UPDATE

Dear Dr. Luigi,

This is referring to my letter GE/WK/2015/7-6, dated 5th July 2015, and to your kind communications about it.

I'm pleased to confirm that the data, related to the field study, conducted as detailed in the above-mentioned letter, already statistically depurated as per your request, show an average catching ratio of RPW with an index of 1:2.55 in favor of the ELECTRAP® versus the Conventional traps.

Please do not hesitate to call me if you require additional information.

Regards,

جلوبال اكسبرتس
Al Ain - U.A.E
GLOBAL EXPERTS
ENVIRON. AND AGRI. CONSULT. AND TRAINING L.L.C.

Walid Kaakeh, Prof.
General Director & Senior Consultant

Global Experts

جلوبال اكسبرتس

P. O. Box 19585, Al-Ain, UAE

ص. ب. 19585، العين، الإمارات العربية المتحدة

Tel: +971-3-7219929 * Mobile: +971-50-4484839
e-mail: walidkaakeh@global-experts.net, wkaakeh@hotmail.com
http://www.global-experts.net

No. GE/WK/2015/7-6
Date: 5th July 2015

Dr. Luigi Porcella PhD
Founding Partner – Chairman UAE FIRST
Suite 508 | The Fairmont - Sheikh Zayed Road
Dubai, UAE

Subject: Field Evaluation of Semiochemical (Pheromone + Kairomone) Traps against the Red Palm Weevil (RPW) in UAE.

Dear Dr Luigi,

A field study was conducted for two months (28th April - 1st July 2015) in two date palm trees farms located in Al Ain City, with the assistance of the staff deployed by the Farmers Services Center. The objective of the study was to compare ELECTRAP® with the conventional food baited, suspended pheromone traps for their efficacy in mass trapping of the RPW. Weekly maintenance and data collection of all traps were personally made during the study.

Based on the field evaluation, ELECTRAP® provided a better practical, effective and sustainable solution for controlling RPW in date palm farms at the best of the current state of the art. Our results were based on the weekly catch of adult RPW in all traps. Conventional traps required a weekly maintenance (as adding water and dates) while ELECTRAP® did not require any.

Please note that I have evaluated many semiochemical traps during the past 20 years, during my tenure at UAE University and my managing various consultancies and research studies conducted at Global Experts Ltd.

ELECTRAP® device, therefore, is nowadays to be considered the best device to manage the population of RPW, the most dangerous pest on date palm in the UAE as well as in the Gulf Countries. ELECTRAP®, for that reasons, should be the essential component of any Innovative/Integrated Pest Management program.

Please do not hesitate to call me if you require additional information.

Regards,
Walid Kaakeh, Prof.
General Director & Senior Consultant

Global Experts *جلوبال اكسبرتس*
P. O. Box 19585, Al-Ain, UAE ص. ب. 19585، العين، الإمارات العربية المتحدة
Tel: +971-3-7219929 * Mobile: +971-50-4484839
e-mail: walidkaakeh@global-experts.net, wkaakeh@hotmail.com
http://www.global-experts.net

Università degli Studi di Sassari
Dipartimento di AGRARIA
Viale Italia n. 39 - 07100 SASSARI SS

Sez. Patologia vegetale ed Entomologia
Prof. Pietro Luciano
Tel.: 079-229328 - Fax: 079-229329
e-mail: pluciano@uniss.it

TO WHOM IT MAY CONCERN

Sassari, 19 December 2014

This is to attest that from the month of November the Department of Agriculture, University of Sassari, is conducting a survey on the effectiveness of semiochemical (pheromone and kairomone) traps for monitoring and mass trapping of the red palm weevil, *Rhynchophorus ferrugineus*, comparing two traditional traps with ELECTRAP, patented by Dr. Luigi Porcella of First Innovation Right Solutions Technologies, Ajman Free Zone, UAE.

Even though the total quantity of data collected so far needs more time to allow a final and complete statistical comparison among traps, we observed constant and relevant higher weekly captures on ELECTRAP devices than on the other traps tested.

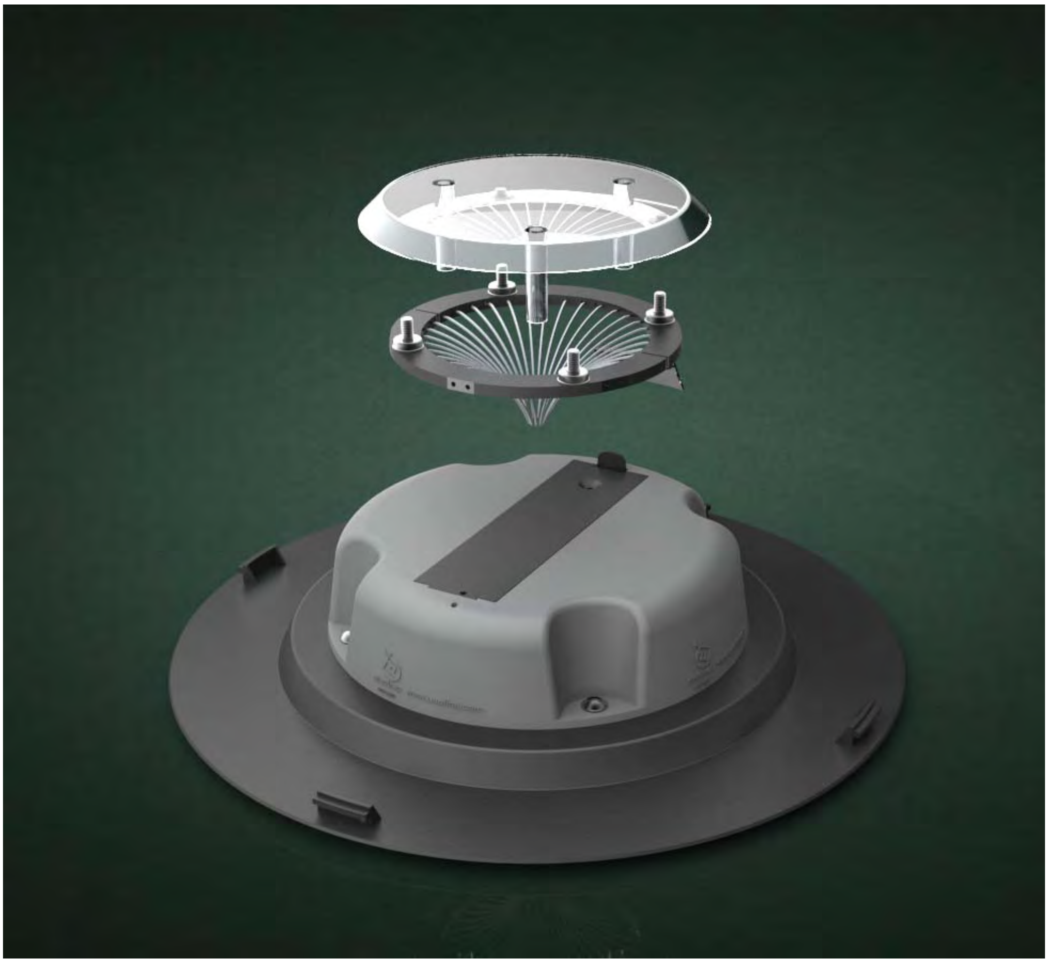
Scientific Coordinator

Pietro Luciano

(Prof. Pietro Luciano)

Electromagnetic Communication and Olfaction in Insects

Progresses in Studies and Applications on RPW Plague



Date: 27 November 2013

Authored By:

Dr. Luigi Porcella PhD

luigi.porcella@uaefirst.com

The importance of infrared radiation as a vehicle for the conveyance of information by "invisible rays" was recognized by the military early in World War II. The versatile Bell Laboratories physicist, Herbert E. Ives, developed the Sniperscope, which uses infrared light, and also developed infrared signalling between ships. Every object above a temperature of absolute zero (-273[degrees] C) radiates infrared wavelengths. Everything at the temperature of life radiates infrared. That is why we call it "the radiation of life".

Summary

The ongoing debate over the mechanism of primary olfaction has two opposed theories: according to some researchers, the olfactory epithelium reads the shape of odorant molecules; others assert that the electronic or vibratory aspect of the scent molecule is crucial.

Several recent studies, contrarily, demonstrate that insects "smell" pheromones an kairomones by tuning into their infrared emissions. Molecules do not need to interact physically: the interaction can be via electromagnetic field.

This study is the analytical approach to the field implementation of the most scientifically accredited theory and of its corollary consequences.

Introduction

Why is a moth attracted to a candle flame? The question has baffled many entomologists. A clue comes from the fact that a moth is attracted to a candle flame or to certain lights, but not to the light of a campfire (unless green wood is being burned). The English poet, Thomas Carlyle, attributed the moth's self-destructive behaviour to passionate love. In a way, Carlyle was correct.

After many years of fascination with the moth and the flame, scientific community decided that there must be something besides visible light coming from the candle. A candle is made of wax, and the insect is coated with wax. Perhaps heated waxes emit some unknown frequency that the moth can sense. Perhaps this frequency is in the infrared region. We shall see that careful research confirmed these ideas. Once sensitive spectroscopic technology became available, it was possible to confirm that the candle produces a wide range of infrared emissions corresponding to the emissions of pheromone/kairomone molecules.

Insect Communication

Insects have a fantastic ability to find specific mates, hosts and crops among the myriads of nature's species and the diverse attractant molecules they emit. These insect sex and food attractants are called, respectively, pheromones and kairomones, words from the Greek: pherein (to carry), kairos (the right or opportune moment) and hormain (to excite).

A problem with the pheromone/kairomone attraction hypothesis is that a male moth can find a female who is downwind. The breezes are carrying the so-called attractant molecules away from the male moth, and not toward him. This dilemma with chemical attraction in insects has similarities to the problem in homeopathy. There is a point in the dilution of a molecule, beyond Avogadro's number, where there are essentially no molecules remaining in a given volume, yet a biological effect is still present. Entomologists and naturalists dating back to the early 18th Century had suggested the possibility that insects communicate by radiations emitted from oscillating molecules.

In 1894, a famous American entomologist, C. V. Riley, attributed the insect's remarkable sense of direction to some unknown communication system, which goes beyond scent and hearing. Riley referred to certain subtle vibrations that could be detected by a sense organ that does not respond to light of the same frequencies that our eyes can see, but that responds to other frequencies to which we are blind.

An equally famous French entomologist, J. H. Fabre, speculated in 1913 that the (then) recent invention of wireless telegraphy might have been anticipated by the Peacock moth, which can attract males from miles away, possibly by "electric or magnetic waves."

Other entomologists concluded that neither sight nor smell is sufficient to explain the attraction of the male moth from long distances. Many of these scientists concluded that insects must emit some sort of "special waves or rays" for long-distance communication.

In the more recent literature, a British electrical engineer, E. R. Laithwaite, had noticed that the moth antenna has a remarkable resemblance to a radar antenna. In 1960, Laithwaite wrote "A radiation theory of the assembling of moths." He also noted that a male moth can fly with the wind to find a female. Laithwaite concluded that there must be an electromagnetic attractant signal that travels independent of the wind.

I agree: the chances of a chemical molecule landing on the male antenna are far less than the chances of the antenna passing through the electromagnetic field emitted by the pheromone/kairomone and the shape of the moth antenna resembles that of a direction finder. Perhaps the insects are homing in on signals they detect by moving from side to side off the main beam, like pilots follow a directional beacon to an airport. Perhaps the zigzag flights of moths and butterflies are simply a scanning process, using direction-finding antenna arrays. Also Callahan found a variety of correspondences between the structures of various insect antennas and radio and microwave antennas.

The MASER

Charles H. Townes, who received the Nobel Prize with Arthur L. Schawlow for the invention of the laser, observed that Microwave Amplification by Stimulated Emission of Radiation (MASER) is common in nature. Oscillations from molecules can be coherent. Townes had noted that some gases oscillate very readily in the infrared region. It is easier to obtain fluorescence in the infrared region (particularly the far-infrared) because the energies (in terms of electron volts) are lower than for the shorter and more energetic wavelengths in the visible and ultraviolet region.

Visible light from the sun can "pump" or energize the vibrations of scent molecules so that they fluoresce. The night sky is illuminated by light from the moon and from the 3,500 or so bright stars that emit in the infrared region only. This light is invisible to us. The infrared light at night is energetic enough to "pump" scent molecules to fluoresce in the far-infrared region of the spectrum. These molecules need not be contained in sealed tube and be pumped by high voltages, as in a laser. Instead, they can fluoresce naturally as they float through the air, pumped by the natural light sources mentioned above. These emissions are then collected by sense organs such as insect antennas, which are tuned directional resonating systems.

After reviewing all of the literature and suggestions, I agreed that:

- the insect sensory mechanism is both infrared and olfactory;
- insects "smell" odours electronically by tuning into the narrowband infrared radiation emitted by sex, preys, and host-plant scent molecules;
- molecules do not need to interact physically with receptors;
- the interaction can be via the electromagnetic field.

This phenomenon is now recognized by a number of entomologists as being involved in the ability of insects to locate mates, host plants, host mammals (e.g., ticks and mosquitoes), birds, and prey (e.g., spiders).

The Experiments

The most telling evidence that insects use infrared communication systems comes from studies done in Tifton, Georgia. A six-watt blacklight bulb was enclosed inside an infrared filter that completely removed visible and ultraviolet, while passing infrared light with wavelengths from 1 to 30 [micro] m.

This "trap" was placed in a 15' x 15' walk-in cold room set at 65 [degrees] F. Each night, for five successive nights, he released 100 male armyworms into the totally dark room with the trap. At the end of a week, only 7% of the moths had entered the trap. The infrared radiation by itself was not the attractant.

In another week of experiments, two virgin female moths were placed in the trap each night and the armyworm moths were released into the room as before. During this second week, 98% of the male moths were in the trap.

During a final week of experimentation, the females were placed in the trap, but the light was not turned on. No male moths entered the trap. Clearly neither the pheromone/kairomone nor the infrared light alone is the attractant. It is the combination of infrared radiation and pheromone/kairomone molecules released by the female moths that powerfully attracts the male moths.

Another aspect of insect behaviour that has fascinated entomologists is the constant rubbing and cleaning of the antenna by all species of insects and by spiders. Callahan suspected that such rubbing by a female moth might amplify the outgoing infrared pheromone/kairomone signals and thereby facilitate the detection of the message by the male moth. The mechanism he proposed was that the rubbing spread the scent molecules uniformly over the sensilla surface and the more uniform spacing then enabled the female to emit the signals coherently, analogous to the mirrors at either end of a gas laser. When he placed a thin layer of pheromone/kairomone on a beeswax plate, spread it out by rubbing with a silk cloth, and modulated it at 55 cycles per second, he detected the narrowband MASER-like line.

Research has shown that almost all scents operate by stimulation of the C=H double bond. Both light and low frequency sounds (such as the buzzing of a mosquito) can vibrate or "stretch" these C=H bonds in such a manner that the scent molecules emit in the infrared region. For example, ants emit sound around 5 Hz (this is caused by the rapid tapping of their antennas on the ground or on the antennas of other ants). This tapping stimulates emissions by scent molecules the ants lay down to create trails so they can follow each other. When they greet each other, ants can distinguish animals from the same colony by the stimulated emissions from the Dufours gland, which contains a recognition substance. Bees, mosquitoes, flies, crickets, and locusts each emit specific frequencies by the beating of their wings. The stories of the ways these insects use these sounds to stimulate scent molecules in their environment is one of the most fascinating tales of natural history. Callahan research is an example of how much can be learned by combining the keen eye of a naturalist with sensitive biophysical measurement techniques.

Orienting Behaviour

How the male moth orients as he approaches the female? An insect warms its body by beating its wings. The metabolism of the thoracic muscles warms the body surface and the thermal energy is radiated in the infrared region. A moth beating its wings has a surface temperature as much as 8[degrees] F above its resting temperature.

A female moth receptive to mating sits in one spot and vibrates her wings. Night-flying male moths seek their mates at night when the ambient temperature is around 65[degrees] F. The surface of the vibrating moth is not at 65[degrees], but is at about 73[degrees]. Using Wien's formula, we can determine that the background infrared radiation of the earth and leaf surfaces at 65[degrees] F peaks around 10.34 [micro] m, whereas the moth stands out against this background because it is radiating at 9.88 [micro] m. To another organism able to "see" in the infrared region, the female moth stands out like a beacon against the background.

Moreover, the beating of the wings up and down across the warm thoracic region of the female moth's body modulates or "chops" the infrared signal, so the male, sensitive to the infrared, sees a flashing or flickering beacon. The extent of the flickering depends on the male's orientation with respect to the female. Head and abdomen put out little radiation, whereas the thorax emits strongly.

Again, the flickering effect using a pyroelectric infrared detector made of a crystal of triglycinesulfate has been confirmed. The signal emitted by a moth beating its wings varied in intensity, depending on the angle between the insect and the detector. The different oscilloscope traces obtained with the pyroelectric detector at different angles from the female moth showed two peaks in the tracings in the upper right and lower left and notches: these double and notched peaks arise because the female moth has two wings on each side, and these wings can twist or change their pitch independently of each other. The relation between the peaks gives the approaching male moth information on his azimuth in relation to the female, and on his angle of approach. Callahan compared this insect navigational system with the instrument landing systems (ILS) developed by the United States Air Force to enable planes to land under conditions of poor visibility.

Waiting for Technology

In some cases, obvious experiments had to be postponed until the appropriate instrumentation became available. The evolution of laser technologies, and thinking deeply about how laser and

MASER-like systems might function in nature were patiently watched One of the first fast Fourier transform (FFT) spectrophotometers from Digilab, when they first became available in 1970, was used as instrument to demonstrate that the infrared output from pheromone/kairomone samples is greatly increased when the samples are vibrated with sounds similar to those made by insects. In the early years of his research, it was difficult to generate pure infrared signals. But the researchers were ready to test the effects of pure IR on insect behaviour when good sources became available.

Candle Flames, Green Wood, and an Irish Singer

In his experiments, using the FFT spectrophotometer, Callahan was able to demonstrate that paraffin and beeswax candles emit many narrowband infrared frequencies between 2 and 30 [micro] m. He observed the cabbage looper male protrude his claspers toward the flame-something the moth normally does only in the presence of a pheromone/kairomone from a female of his own species. The candle flame emits almost the exact same narrow 17-[micro] m frequencies as the pheromone. The flickering of the flame also modulates the candle radiation to produce a chopped ILS-type signal as described above. The male moth is convinced he is approaching the love of his life, as Carlyle suggested.

The moth is attracted to the campfire when green wood is being burned. Callahan learned that this attraction is due to the thousands of infrared frequencies emitted from the heated hydrocarbon gases extracted from the green wood by the intense heat. Emissions of chlorophyll are particularly attractive. Seasoned wood lacks chlorophyll and is of much less interest to the moth.

While Callahan has retired from his successful research program, he continues to observe nature and report his findings in his books. For example, in Nature's Silent Music he describes a moth in an Irish pub spiralling in front of a singing Irishman. The moth is attracted to the singer's breath. The alcohol in his breath is "doped" with ammonia, and the combination, when "pumped" with low frequency sound, emits strong infrared emissions that resemble those of certain plant scent molecules.

Different Species, Different Codes

The narrowband frequencies that would fit into the atmospheric windows between 2 and 30 [micro] m would provide more than 930 different infrared "radio" channels available to code information on different species of insects, prey animals, and food crops. When one considers the millions of insect species in nature, this infrared-coded scent system provides a logical mechanism for recognition and communication. The infrared frequency band is the largest part of the electromagnetic spectrum, occupying some 17 octaves, in contrast to the single octave in the visible spectrum.

A familiar example of infrared technology is the remote control we use every day to operate our televisions. Each channel and each function has a code that is communicated as a low power pulsing infrared beam. Nature invented this trick long ago.

Theoretical Conclusions

A consequence of ancient thinking, dating to Democritus, Epicurus, and Lucretius, is that all matter is composed of "imperishable" atoms, tiny indivisible particles that can neither be created nor destroyed. “Billiard-ball” units, atoms or molecules, move in straight lines in all directions, in accordance with the iron laws of "necessity" that were eventually replaced with Newton's Laws of Motion. Interactions cannot take place between atoms or molecules unless they touch one another.

These ideas were pivotal for the development of Western science. A legacy of this natural philosophy is the modern molecular view of regulatory interactions in which signal molecules such as hormones or neurotransmitters or pheromones diffuse, wiggle, and bump about randomly until they chance to approach an appropriate receptor site, at which point electrostatic and other short-range forces draw the signal molecule into the receptor, much like a key fits into a lock. The "key" obviously has to have a structure or shape that matches the "lock." For this model, shape is crucial.

We now know that atoms are not solid and indivisible, and we also know that the "lock and key" model is an incomplete picture of regulations. The random meeting between hormone and receptor, or enzyme and substrate, taking place in a sea of other randomly moving molecules, has a statistical probability approaching zero. Under these conditions, the simplest biological event or regulatory process should require some thousands of years to take place. Albert Szent-Gyorgyi recognized years ago that life is simply too fast and too subtle to wait for molecules to wander around aimlessly until they happen to bump into the right targets. Electromagnetic signalling is not only physically possible; it is the ideal mechanism for communication in living systems. For this model, electromagnetic resonance, not shape, is crucial.

The lock and key model is so easy to visualize and so deeply ingrained in our scientific culture that many have had difficulty comprehending energetic interactions in which molecules interact by co resonance, like radio transmitters and receivers. In living systems, as in radio and television, long-range electromagnetic fields exchange messages across distances because of matching emission and absorption spectra. Non- resonating, unwanted random signals are excluded simply because they do not resonate. All of this is fully consonant with the laws of physics. Resonance is a truly remarkable phenomenon, but it is not magic.

Infrared signalling has many applications beyond insect communication. The concept of bio-electromagnetic communications is receiving increasing attention in the scientific community. For example, see Bioelectrodynamics and Biocommunication by Ho, Popp and Warnke and a series of studies on cellular infrared cellular "vision" by Albrecht-Buehler. Over the years scientists who have published in Frontier Perspectives have written a number of key papers on this topic. As examples, see the work of Benveniste, Smith, and Popp.

The research with insects has obvious and fundamental implications for regulatory biology, energetic therapies, and environmental electromagnetic effects. Its findings also have deep significance for the current debate over the mechanism of primary olfaction, which has split into two camps-those who assume that the olfactory epithelium reads the shape of odorant molecules, and those who suggest that the electronic or vibratory aspect of the scent molecule is crucial. An engrossing popular book on this topic, The Emperor of Scent, documents the pervasive influence of the lock and key or "shapist" model in primary olfaction, in spite of many inconsistencies in structure-odour relationships.

Practical Conclusions

Using the aforesaid concepts, it is nowadays available a revolutionary device, ELECTRAP®, and here is a short description about it works.

As exposed, there is no evidence whatsoever that physical contact ever occurred between the scent (i.e. an insect Pheromone and Kairomone) and the purported receptors (odorant receptor proteins found on the dendritic membranes). Instead, detection might be occurring at a distance which suggests electromagnetic effects may be mediating this whole process. Therefore, vibrational frequencies became the prime candidate for an alternate theory.

If these vibrational frequencies are involved, then theoretically, smell can be both amplified and squelched. Both of these phenomena have been successfully demonstrated in the laboratory, and ELECTRAP® capitalizes on the former.

Specifically, the breakthrough discovery revealed that placing a scent in a highly reflective cavity resulted in heightened activity among Palm Red Weevils.

Over 4,000 experiments have been completed to date, and the surprising results are telling us that the efficiency is increased more than 300% whilst the management cost is reduced by more than 50%.

In fact, as a matter of an example, the Pheromone and Kairomone lures last for lengthily periods of time. There's no need to replace the Pheromone and Kairomone lures according to manufacturer's recommendations.

The ELECTRAP® is considerably more sensitive than the standard traps on the market. After an immediate impact, over a few short seasons it can exercise complete control.

Efficiency

- The "bucket" traps attract approximately 13% of the RPW under laboratory conditions.
- Under the same conditions, ELECTRAP® capture over 80%.

- **Inexpensiveness**

- Based on five years timeframe, the global cost of a traditional system is 170% more expensive than an ELECTRAP® system, the lifespan of a well maintained device being more than 10-15 years…
- Due, inter alias, to the overcoming of the critical necessity of water provision, the needed manpower for basic maintenance is radically reduced by, at least, 60%.
- Pheromone and Kairomone lures will last up to a year in our trap with virtually no loss in efficacy.

TRADITIONAL TRAPS for a standard 4 hectares farm (±350 trees with 8 traps) in UAE

FIRST YEAR COST

Item ;	Item Descripti	Unit Cost	No	Unit	Total Cost	Notes
01	Device	**AED 15.00**	8	piece	AED 120.00	supposed to last 5 years
02	Pheromone	**AED 5.00**	96	piece	AED 480.00	1 piece per trap every month
03	Kairomone	**AED 5.00**	96	piece	AED 480.00	1 piece per trap every month
04	Maintenance	**AED 10.00**	208	visit/year	AED 2,080.00	one visit every two weeks
				SubTot 01	**AED 3,160.00**	

SUBSEQUENT YEARS COST

Item ;	Item Descripti	Unit Cost	No	Unit	Total Cost	Notes
01	Device	**AED 15.00**	0	piece	AED 0.00	
02	Pheromone	**AED 5.00**	96	piece	AED 480.00	1 piece per trap every month
03	Kairomone	**AED 5.00**	96	piece	AED 480.00	1 piece per trap every month
04	Maintenance	**AED 10.00**	208	visit/year	AED 2,080.00	one visit every two weeks
				SubTot 02	**AED 3,040.00**	

FIVE YEARS COST

Year	Amount	Progressive
01	AED 3,160.00	AED 3,160.00
02	AED 3,040.00	AED 6,200.00
03	AED 3,040.00	AED 9,240.00
04	AED 3,040.00	AED 12,280.00
05	AED 3,040.00	**AED 15,320.00**

ELECTRAP for a standard 4 hectares farm (±350 trees with 8 traps) in UAE

FIRST YEAR COST

Item	Item Description	Unit Cost	No	Unit	Total Cost	Notes
01	Device	**AED 500.00**	8	piece	AED 4,000.00	
02	Phero/Kairomone	**AED 12.50**	32	piece	AED 400.00	1 piece per trap every 3 months
04	Maintainance	**AED 10.00**	32	visit/year	AED 320.00	one visit every 3 months
				SubTot 01	**AED 4,720.00**	

SUBSEQUENT YEARS COST

Item	Item Description	Unit Cost	No	Unit	Total Cost	Notes
01	Device	**AED 0.00**	0	piece	AED 0.00	
02	Phero/Kairomone	**AED 12.50**	32	piece	AED 400.00	1 piece per trap every 3 months
04	Maintainance	**AED 10.00**	32	visit/year	AED 320.00	one visit every 3 months
				SubTot 02	**AED 720.00**	

FIVE YEARS COST

Year	Amount	Progressive
01	AED 4,720.00	AED 4,720.00
02	AED 720.00	AED 5,440.00
03	AED 720.00	AED 6,160.00
04	AED 720.00	AED 6,880.00
05	AED 720.00	**AED 7,600.00**

FIVE YEARS COMPARATIVE TABLE for a standard farm (±350 trees with 8 traps) in UAE

TRADITIONAL TRAPS

Year	Amount	Progressive Cost
01	AED 3,160.00	AED 3,160.00
02	AED 3,040.00	AED 6,200.00
03	AED 3,040.00	AED 9,240.00
04	AED 3,040.00	AED 12,280.00
05	AED 3,040.00	**AED 15,320.00**

ELECTRAP

Year	Amount	Progressive Cost
01	AED 4,720.00	AED 4,720.00
02	AED 720.00	AED 5,440.00
03	AED 720.00	AED 6,160.00
04	AED 720.00	AED 6,880.00
05	AED 720.00	**AED 7,600.00**

GAP

Year	Annual Difference	Progressive Benefit
01	AED 1,560.00	-AED 1,560.00
02	-AED 2,320.00	AED 760.00
03	-AED 2,320.00	AED 3,080.00
04	-AED 2,320.00	AED 5,400.00
05	-AED 2,320.00	**AED 7,720.00**

percentage ratio 1 **201.58 %**

percentage ratio 2 **49.61 %**

Comments

A Consider that, regarding the costs of maintenance, the applied criterion is a monthly cost of 2,000 AED for an average of 24 working days per month.
This doesn't forcibly includes other costs as visa, insurance, annual leave, accommodation, food, transportation.

B The life span of ELECTRAP, if properly managed, can easily reach more than 10 years

CONCLUSIONS

Assuming that in UAE we have 12,000,000 Date Palm Trees, their full coverage savings (a part of the increased number of captures) will be of not less than AED 264,685,714

FIVE YEARS COST per CATCH TABLE for a standard farm (±350 trees with 8 traps) in UAE

WORST CASE

very rarely expected	Date Palm Trees per Farm	Number of Traps	Catches Trap/Year (*)	Catches Trap/5Year (*)	Total Catches Farm/5Year	1 Catch Cost per 5 years (**)
Traditional Traps	350	8	17	85	680	AED 22.53
(based on Governmental published data)						
ELECTRAP	350	8	17	85	680	AED 11.18
(based on published research of Prof. Walid Kaakeh)						
1 to 1 ratio					***Saving Ratio in %***	***50.39***

AVERAGE CASE

most commonly expected	Date Palm Trees per Farm	Number of Traps	Catches Trap/Year (*)	Catches Trap/5Year (*)	Total Catches Farm/5Year	1 Catch Cost per 5 years (**)
Traditional Traps	350	8	17	85	680	AED 22.53
(based on Governmental published data)						
ELECTRAP	350	8	42	210	1,680	AED 4.52
(based on published research of Prof. Walid Kaakeh)						
1 to 2.5 ratio					***Saving Ratio in %***	***79.92***

BEST CASE

expected in around 10% of cases	Date Palm Trees per Farm	Number of Traps	Catches Trap/Year (*)	Catches Trap/5Year (*)	Total Catches Farm/5Year	1 Catch Cost per 5 years (**)
Traditional Traps	350	8	17	85	680	AED 22.53
(based on Governmental published data)						
ELECTRAP	350	8	85	425	3,400	AED 2.24
(based on published research of Prof. Walid Kaakeh)						
1 to 5 ratio					***Saving Ratio in %***	***90.08***

NOTES

(*) 2,000,000 catches with 118,000 traditional traps deployed, as published

(**) Refer to COMPARATIVE table (i.e. 5 years cost divided by the number of 5 years catches)

electrap
RED PALM WEEVILS
FINAL SOLUTION

INSTRUCTIONS

01 Unscrew the Bottom Base and separate it from the Top Conical Cover

02 Open the lid of the Internal Emission Chamber

03 Carefully open the sachet of Phero/Kairo 700+

04 Place the diffusers flatly broaden on the bottom of the Internal Emission Chamber (with the dark section on the bottom and the white one over the latter) slightly touching the mirror wall on the opposite side of the opening hole of the lid

05 Close the lid of the Internal Emission Chamber

06 Put and screw together the Top Conical Cover and the Bottom Base

07 Fix the Rain-Guard on the three holes on the top of the Top Conical Cover

08 Place your ELECTRAP® on the field, as far as possible in the middle of the infested area at, at least, 1.5/2 meters from any palm tree

09 The distance between each device and its nearest ones must be within 30 and 50 linear meters, according to the infestation level

10 Visit your ELECTRAP® every 45 day, removing the Rain-Guard and unscrewing the Bottom Base

11 Remove the trapped RPW and destroy them, possibly burning them in a safe way and place

12 Check the conditions and position of the Phero/Kairo 700+

13 Put and screw together again the Top Conical Cover and the Bottom Base and fix back the Rain-Guard on the three holes on the top of the Top Conical Cover

14 Replace your Phero/Kairo 700+ every 8/10 months, according with its conditions

15 Keep the packaging cartons in a safe, dry place. We recommend you to use them in the case you will need new storage/displacement of your ELECTRAP®. Don't forget to carefully disassemble the Rain-Guard before re-packing

16 In case of any doubt, contact us at support@uaefirst.com

1st FUTURE INNOVATION RIGHT SOLUTIONS TECHNOLOGIES UNITED ARAB EMIRATES

FIRST - **F**uture **I**nnovation **R**ight **S**olution **T**echnologies
AFZ Licence n. 10047
Abu Dhabi | UAE | P.O. Box 27709
Tel. +971 2 552 4777 | Mobile. +971 56 633 6308 | Skype: uaefirst_support
support@uaefirst.com | www.uaefirst.com

Patent Processes

نموذج 7

United Arab Emirates Ministry of Economy Industrial Sector Industrial Property Administration		دولة الإمارات العربية المتحدة وزارة الاقتصاد قطاع الصناعة إدارة الملكية الصناعية

إيصال استلام مستندات طلب براءة اختراع أو شهادة منفعة

☒ براءة اختراع ☐ شهادة منفعة

رقم القيد : P242/2014	**رقم الإيصال** : 0440871303141248	**التاريخ** : 2014/03/13 **الوقت** :
إسم الطالب : بصفته وكيلا عن فيوتشر اينوفيشن رايت سوليوشنز تيكنولوجيز		الجنسية : الأمارات العربية التحدة

مسمى الاختراع : (الكتراب) مصيدة السوسة الحمراء ذات التجويف الرنيني

بيان المستندات المستلمة مع الطلب :

1 - نموذج طلب براءة اختراع أو شهادة منفعة	☒
2 - وصف تفصيلي للاختراع	☒
3 - الرسم الخاص بالاختراع إذا كان ضروريا إدراك الاختراع أو كان طابع الاختراع يسمح بذلك	☒
4 - ملخص الاختراع مصحوبا بأفضل رسم توضيحي إن وجد	☒
5- مستخرج من السجل التجاري أو مستخرج رسمي من عقد التأسيس إذا كان الطالب شركة أو هيئة	☒
6 - سند الوكالة إذ أودع الطلب بواسطة وكيل	☐
7 - المستند الدال على أحقية الطالب في الاختراع إذا كان الطالب غير المخترع	☐
8 - موافقة صاحب الشأن إذ كانت العناصر الجوهرية للاختراع قد تم الحصول عليها من اختراع شخص آخر	☐
9 - إذا كان الطلب يتضمن الرغبة في اعتبار الأولوية في التسجيل لطلب سبق تقديمه في دولة تكون طرفا في اتفاقية أو معاهدة دولية مع دولة الإمارات العربية المتحدة وفقا للمادة (11) من القانون فانه يجب تقديم صورة من الطلب السابق و المستندات المرفقة به مصحوبة بشهادة تبين تاريخ و رقم إيداعه و الدولة التي أودع فيها.	☐
10 - مستندات طلب (PCT) المنشور و تقرير البحث و الفحص الفني	☐
11 - الشهـــادة الصادرة بالحمـــايـــة المـــؤقـــتة إن وجدت	☐
12 - تعهد كتابي بتقديم اللازم من المستندات عدا المرفق بالطلب منها (من 4 - 11)	☐

اسم المستلم: Amina التوقيع :	مجموع المستندات المستلمة: 4 الختم :

يؤشر بعلامة ☒ أمام المستندات المستلمة .

مدة براءة الاختراع (عشرون سنة) ، و مدة شهادة المنفعة (عشر سنوات) ، ويجب سداد الرسم السنوي في بداية كل سنة اعتبارا من السنة التالية لتاريخ تقديم الطلب و بانتظام .

United Arab Emirates Ministry of Economy Intellectual Property Sector Industrial Property Administration		دولة الامارات العربية المتحدة وزارة الاقتصاد قطاع الملكية الفكرية إدارة الملكية الصناعية

وإقرار باستلام نموذج التعليمات الخاص
بطلب الحصول على براءة اختراع أو نموذج منفعة

أولا : مستندات يجب تقديمها لحظة تقديم الطلب دون إعطاء صاحب الشأن مهلة :

1. الوصف الكامل (وصف تفصيلي للاختراع وطريقة استغلاله على وجه يمكن تنفيذه ، ويجب أن يشتمل:- الوصف الكامل للاختراع مشتملا على العناصر الجديدة المطلوب حمايتها و التي يطلب صاحب الشأن حمايتها بطريقة محددة واضحة ، رسم للاختراع طبقاً لمقتضيات الأحوال .
2. وصف مختصر للاختراع باللغة العربية مرفقاً به ترجمة باللغة الإنجليزية.
3. صورة من الوصف التفصيلي للاختراع ورسمه وغير ذلك من المستندات الأجنبية مصدقاً عليها حسب الاحوال

ثانيا : أحوال يعتبر فيها الطلب كأن لم يكن إذا لم تستوفى المستندات خلال مهلة محددة

الحالة الأولى (المهلة المحددة 90 يوما) : يعتبر الطالب كأن لم يكن فى حالة عدم تقديم المستندات التالية موثقة ومصدقاً عليها :

1. مستخرج السجل التجارى أو مستخرج رسمى من محضر عقد الإنشاء أو نسخة من نظام الشركة إذا كان الطالب شركة أو هيئة.
2. مستند انتقال الملكية على أن يكون مصحوبا بترجمة باللغة العربية.
3. مستند الوكالة .

ملحوظة: ويجب تقديم هذه المستندات المشار إليها عاليه مع الطلب أو خلال 90 يوما من تاريخ تقديم الطلب بناء على تعهد مقدم مــن صاحب الشأن وإذا انتهت المهلة المحددة ولم يستوف هذه المستندات يعتبر الطلب كأن لم يكن .

الحالة الثانية : (المهلة المحددة شهرين):

1. على الطالب أداء رسم النشر عن قبول الطلب فى ميعاد لا يجاوز شهرين من تاريخ الإخطار لقبول الطلب وإلا يعتبر الطلب كأن لم يكن .

ثالثاً :الأحوال التى يعتبر فيها الطلب متنازلاً عنه :

إذا كان قرار الإدارة يقضى بإدخال تعديلات على الطلب ولم يقم الطالب بإجراء هذه التعديلات من تاريخ الإخطار أعتبر متنازلاً عن طلبه

رابعاً :الأحوال التى تنقضى فيها الحقوق المترتبة على الطلب(طلب التقدم والبراءة)

1. انقضاء مدة الحماية التى تخولها براءة الاختراع طبقاً للمادة 12 من قانون براءات الاختراع
2. تنازل صاحب براءة الاختراع عنها.
3. صدور حكم حائز لقوة الشيء المقضى به ببطلان البراءة.
4. عدم دفع الرسوم المستحقة فى مدة ستة أشهر من تاريخ استحقاقها

خامساً: الأحوال التى يسقط فيها الحق فى الأسبقية (المهلة المحددة ثلاثة أشهر)

من تاريخ تقدمه PCT إذا لم يوضح هذا الحق بطلب التقديم و كذلك إذا قدم بعد انتهاء مدة السنة أو 30 شهرا إذا كان الطلب مودع بالبلد الأجنبى عدم تقديم المستند الخاص بالأسبقية خلال ثلاثة أشهر من تاريخ تقديم الطلب و ذلك فى حالة التقدم بمهلة لتقديمه

إقـــــــــرار

أقر أنا (مقدم الطلب / وكيل الطالب) عن الطلب رقم والمقدم بتاريخ

أننى قد استلمت نموذج التعليمات للعلم والإحاطة وتنفيذ ما جاء به ، وليس هناك أى غموض فى عرض التعليمات ، وهذا إقرار منى

المقر بما فيه ☑ **مقدم الطلب** / ☐ **الوكيل** ( )

نموذج 6

United Arab Emirates Ministry of Economy Intellectual Property Sector Industrial Property Administration		دولة الإمارات العربية المتحدة وزارة الاقتصاد قطاع الملكية الفكرية إدارة الملكية الصناعية

تعهد بتقديم مستندات متعلقة بطلب

Commitment to submit documents belongs to application

Industrial drawing ☐ رسم صناعي **Industrial design** ☐ نموذج صناعي **Patent** ☑ براءة اختراع

Application No. / رقم الطلب :	Filing Date / تاريخ التقديم :

اسم الطالب : دلوجي بورسيلا

Applicant(s) name :

Pr. Luigi Porcella

اسم الوكيل:

Agent name :

أتعهد أنا الموقع أدناه بصفتي (صاحب الطلب☑ / وكيلا☐) بأن أقدم لإدارة الملكية الصناعية المستند المبين أدناه خلال تسعين يوما من تاريخ تقديم الطلب .

I am the undersigned as (**An Applicant Owner(s)**☑ / **An Agent** ☐) promise to submit to administration of industrial property the document(s) mentioned below within (90) days, from the date of the application .

200 14 / 3 / 12 **Date / التاريخ**

Signature_ / التوقيع

الوصف المختصر باللغة العربية لبراءة الاختراع / نموذج المنفعة

دولة الإمارات العربية المتحدة وزارة الاقتصاد قطاع الملكية الفكرية إدارة الملكية الصناعية		(22)	
		(21)	
		(44)	
		(45)	
		(11)	

(51)	Int. Cl.7	فيوتشر اينوفيشن رايت سوليوشنز تيكنولوجيز شـــارع الشـــيخ زايـــد , دبـــي , الامـــارات العربيـــة المتحـــدة, ص ب 119748

(71)	1	Suite 508 | The Fairmont | Sheikh Zayed Road | Dubai | UAE | P.O. Box 119 748
	2	د. لويجي بورسيلا
	3	كمال عبيد
(72)	1	د. لويجي بورسيلا
	2	
	3	
(73)	1	
	2	
(74)	1	
	2	
	3	
(30)		
(12)		

(54) اصطياد السوسة الحمراء (رينوكوفوروس فيرروجينوس) من خلال نظام و منهج للتكبير و نشر انبعاثات طبيعية محددة بواسطة غرف الرنين و المصائد .

(57)

أفة السوسة الحمراء (Rhynchophorus Ferrugineus) تصيب اشجار النخيل بدرجة خطيرة و شديدة, مما ينتج عنه خسائر بقيمة ملايين الدولارات سنويا. كافة المصائد المستخدمة سابقا , هي مصائد عامة و لا تستهدف حشرة معينة بذاتها. بناءا على مبدأ التجويف الرنيني , يتغلب النظام والمنهج المستخدمين في الاختراع الحالي على مشكلات أنظمة مكافحة الحشرات السابقة من خلال ما يلي:

- طول موجة إشعاع مناسبة تلائم سوسة النخيل الحمراء (RF) من خلال تحديد الأحجام مناسبة والنسب داخل الغرفة، والفتحات، وعامل الجذب الفرمون.
- مصيدة مخروطية صندوقية، وتغليف الجزء الخاص بالانبعاثات، وتسهيل دخول سوسة النخيل الحمراء (RF) إلى المصيدة ومنع خروجها منها إضافة إلى المساهمة في صدور انبعاثات أفضل.

تم وضع عنصر الإشعاع في مكان معين في جسم مخروطي الشكل مقطوع (المصيدة) مع تموج جانبي نحو الخارج لتسهيل التسلق المحتمل إلى داخل المصيدة كما أن الجانب الداخلي مستوي تمامًا لمنع التسلق المحتمل لسوسة النخيل الحمراء (RF) نحو الخارج.

1st Future Innovation Right Solution Technologies
فيوتشر اينوفيشن رايت سوليوشنز تيكنولوجيز