

ABSTRACT BOOK

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(The abstract text provided is exactly as submitted by the participants)

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Project Code: BehvSc-01 (Team) Online ID:839

Title: Automatic Ration Distribution Machine (ARDM)

Name: Vrishank Samir Kshatri & Karan Chugh Std: 10

Guide: Ruchi Gautam

School: Manav Sthali School; R-Block; New Rajendra Nagar

ABSTRACT:

Project Purpose

To provide accurate amount of ration to people of India below poverty line. This would enable them to acquire the rightful amount without any corruption involved at any level, and this service can be directly availed by the needy.

The government can either link the Aadhar card or provide each person with a unique PIN ID.

We researched various machines and their mechanism. Currently we have made and tested a basic model. In our prototype a person enters the designated PIN number, it releases a box attached in it. We plan to upgrade our prototype such that people will be able to procure item such as Rice etc.

This project includes three modules:

Matrix Keypad --> ADRM Controlling Unit --> Ration Dispensing Unit

Beneficiary Identification: Through Matrix Keypad beneficiary will insert his secret PIN number for

confirming his identification, ADRM Controlling unit will check & authenticate

ADRM Controlling Unit: It is designed on most powerful microcontroller platform Arduino. ADRM unit is

responsible for all decision making process like user identification & proper dispensing of ration as per beneficiary allotted quota.

Ration Dispensing Unit: In this unit ration will be stacked in boxes of specific amount, ADRM controlling unit will give instruction to DC motor to dispense these boxes.

Project Code: Bio-01 (Jr) Online ID:536

Title: Hemigraphis Alternata - A Herbal Wonder for Prolonged Skin Problems in Livestock

Name: Nihal Noojibail Std: 7

Guide: Nishitha.K. K.

School: Indraprastha Vidyalaya; Uppinangady

ABSTRACT:

My curiosity started when I saw our villagers applying the *Hemigraphis alternata* (Tincture plant or Raktha Sanjeevini) extract to their wounds.

To give a scientific touch to this aspect I prepared a pure herbal skin ailment cream, devoid of side effects and chemicals.

I took 4 Kg of Tincture leaves, crushed and squeezed to get 600 gms of extract.

Then boiled the extract and condensed to 1/4 (150 gms) of its original volume.

After cooling, added 25 gms Sodium benzoate as preservative. Then boiled the extract with 25 gms of Gum acacia and 15 gms of *Andrographis paniculata*. I made the ointment with two different bases.

Bee wax based: I mixed 75 gms of Tincture extract with 60 gms of melted Bees wax and 170 gms of Coconut oil and stirred well.

Petroleum jelly based: Mixed 75 gms of Tincture extract with 225 gms of Petroleum jelly, 25 gms of Coconut oil and stirred well.

As a further step of investigation, I applied these ointments to the cows, dogs and pigs which have Mange, Myiasis and Flea allergy dermatitis.

It cured these prolonged problems very fast.

pH, Conductivity, HPTLC, Phytochemical, Anti-Microbial tests were done. It showed the presence of Alcholoids, Tannins, Flavanoids, Phenolic compounds, which acts as anti-septic, anti-bacterial, anti-oxidant and anti-inflammatory which helps in curing all the skin problems in animals. We are emphasising to prepare After shave and Tooth paste also.

Project Code: Bio-02 (Team) Online ID:673

Title: Effect Of Indian Beech Tree (*Pongamia pinnata*) stem Extract On Oral Flora

Name: Masharu Yesha T. & Dholakia Moha N. Std: 9

Guide: Joshi Apeksha

School: Shree G.K.Dholakiya School; Uni.Road;Rajkot

ABSTRACT:

To check the effect of *Pongamia pinnata* stem on oral flora, first of all we had taken stem of *Pongamia pinnata* and removed leaves from it. We crushed the stem and prepared pulp by adding water and checked antibacterial and antifungal activity against *Escherichia coli*, *Staphylococcus aureus*, *Bacillus megaterium*, *Pseudomonas aeruginosa*, *Bacillus subtilis*, Yeast (*Saccharomyces cerevisiae*). We found that the mixture having 85% pulp of *Pongamia pinnata* stem and 15% water showed the best results against fungal and bacterial strains.

We obtained powder of *Pongamia pinnata* stem through shade drying. The active contents in the powder were extracted using solvent extraction method and the extract samples 1 to 3 (Petroleum Ether, Methanol, Water) thus obtained were tested for activity against bacterial and fungal strains. Positive and negative control sample was also maintained. All the extracts showed significant activity against

bacteria and fungi. We gave these extracts in Chemistry Department, Saurashtra University to find out its chemical content with the use of HPLC and GC-MS method.

Pongamia pinnata stem has good antibacterial and antifungal activity against the selected strains and the maximum activity evinced on...

Escherichia coli with highest zone of inhibition (36mm) by water extract,
Staphylococcus aureus with highest zone of inhibition (20mm) by water extract,

Bacillus megaterium with highest zone of inhibition (20mm) by Methanol extract,

Pseudomonas aeruginosa with highest zone of inhibition (13mm) by Methanol extract,

Bacillus subtilis with highest zone of inhibition (12mm) by Methanol extract,

Yeast (*Saccharomyces cerevisiae*) with highest zone of inhibition (15mm) by Petroleum Ether extract compared to other extracts.

After this experiment we had compared *Pongamia pinnata* stem with other plant stems like Neem (*Azadirachta indica*), Banyan tree (*Ficus benghalensis*), and Deshi Baval (*Acacia nilotica*).

Project Code: Bio-03 (Team) Online ID:683

Title: Antifungal and antibacterial Properties of *Abrus precatorius* leaf

Name: Kugashiya Meghavi P. & Chauhan Riya J. Std: 9

Guide: Joshi Apeksha

School: Shree G.K.Dholakiya School; Uni.Road;Rajkot

ABSTRACT:

Many synthetic chemicals are used in the control of fungal infections on plants but due to their residual toxicity and non-biodegradable nature they are known to cause carcinogenicity, teratogenicity, they destroy useful microorganisms and pollute the environment, soil and ground water. Due to these reasons the use of many of the synthetic fungicides has now been restricted. In search of better alternatives, natural products are considered to be environmentally safe for control of fungal diseases. we just simple experiment is first we took 5-6 bread from them it put 3 bread now paste of *Abrus precatorius* seed and leaf juice after first juice from leaves to *Abrus precatorius* seed adding on one bread. Then after without water to past of adding on bread and growing fungi. Prove on this experiment of inhibited growth of fungal by adding *Abrus precatorius* leaves juice.

Inspire from this we check antibacterial activates of *Abrus precatorius* leaf. We obtained crush from leaf and prepared 3 different samples this organic solvents in different amount and made different proportion and checked antibacterial activity against *E coli* and *staphylococcus spp.* Positive and negative control sample was also maintained . We found that the mixture having 5gm pulp of *Abrus precatorius*

leaf and add 10ml different organic solvents showed the best antibacterial activity against all bacterial strains. The well in which the methanol extract was added showed an inhibitory zone of diameter against Ecoli(19mm),staphylococcus spp. (6mm). The well in which the petroleum ether extract was added showed an inhibitory zone of diameter against Ecoli(18mm),staphylococcus spp.(4mm).

Project Code: Chem-01 (Team) Online ID:538

Title: An Innovative Natural Instant Binding Material from CNSL and Lime

Name: Shreevara A. & Thejas K. S. Std: 9

Guide: Krishnaprasad V.

School: Indraprastha Vidyalaya; Uppinangady

ABSTRACT:

Cashew nut tree is grown all across India. This tree grows up to 10ft with peculiar bark. The outer shell of the nut is mainly discarded as a waste. The dark oil extracted from cashew nut shells is popularly known as CNSL which is being used in painting industries. Our aim is to prepare a natural binding material using this oil.

To prepare a natural binding material, we took CNSL and lime in the ratio of 4:1 and mixed it well. The combination of phenol present in the CNSL and the Calcium Carbonate (lime) produces salt called Calcium Phenate. This resinous polymer acts as an adhesive. This salt has the binding property and we thought of using it as a gum.

By conducting different experiments, we found that this gum binds almost all types of materials and has got a wide range of daily application. The gum can be applied to bind materials like paper, plastics, pipes, woods, metals, earthen pots, glasses etc. The gum can be an alternate for M-Seal, Fevicol, Bril, as it binds almost all types of materials whereas other gums do not. This gum is cheaper and faster than other market products.

We also prepared bricks of sized 9x4x3 by mixing 280gms of gum for 3kgs of clay and baked it. When the Pressure Calculation is conducted, it proved as a failure because of some improper method of preparation. As per the experts improved procedure may provide the positive result. So, we are working on it.

Project Code: Chem-02 (Team) Online ID:668

Title: Smart Nanodevices- Future for clean air and green world.

Name: Komal S & Aditya B Std: 10th Std

Guide: Ganesh Shastri

School: Sharada vidyaniketana; Talapady; Devinagar;

ABSTRACT:

Obnoxious gases such as carbon monoxide (CO) and sulfur dioxide (SO₂), emitted from the vehicles contribute to 70 % of air pollution (Fig. 1). Hence, there is a growing need in the continuous monitoring of these gases at lower detection limits. In particular, various nanomaterials have been reported to sense CO and SO₂ gases. Among them, metal oxide semiconductors have been studied widely. However, either these sensors have large detection limit or are inactive at low temperature of function. Using the currently available semiconductor gas sensors CO and SO₂ can be detected as low as 30 and 20 ppm, respectively. Considering the above criteria, we envisaged to develop sensors for detection of the target gases, CO and SO₂, at low temperature with lower detection limit and long term stability so as to apply them in real-time monitoring of emission near transport infrastructure. During the screening test, to our surprise, we found for the first time (never reported in literature) that manganese ferrite (MnFe₂O₄) and cerium oxide (CeO₂) nanoparticles furnished absolute response over the target gases, CO and SO₂, respectively. These nanomaterials were synthesized by simple methods. The MnFe₂O₄ nanosensor detects CO at a concentration as low as 5 ppm at 250 oC whereas; CeO₂ selectively detects 3 ppm SO₂ at 200 oC. We have built a small prototype device using readily available materials and our nanoparticles as gas sensor materials. Sensitivity of 18 and 10 % was observed for MnFe₂O₄ and CeO₂. The cost is expected to be under Rs500.

Project Code: CompSc-01 Online ID:831

Title: WEATHER PATTERN ANALYSIS OVER A WIDE TO LOCAL AREA WITH NETWORK INTEGRATED EMBEDDED TECHNOLOGY

Name: VARAD C HARIDAS Std: 9

Guide: JALALUDDIN MOHD ANSARI SHAJAHAN

School: CHENNAI PUBLIC SCHOOL -THIRUMAZHISAI

ABSTRACT:

In a country with such vast area, weather differs from place to place. As the weather monitoring systems are present only in major cities that too in certain zone there is less accuracy in weather monitoring. For example if I need the parameter of a particular region in Chennai or any remote location for a period of time, day, year or decade it seems impossible because of the constant fluctuation in weather. Thus people are not able to get proper weather history of a place while relocating, or even for more serious issues like setting up an industry or so on. Our project deals with accurate monitoring of weather by using comparatively less costly machinery. This will enable us to monitor weather reports of small places also. Unlike other monitoring systems, this one is placed almost everywhere, but yet has a centralized server. That means the entire statistical data of a region in a city or village can be clearly witnessed with help of graph. Our project also deals

with the software development for a user-friendly interface. For the creation and testing we have used a software called as 'MATLAB'. An graph plotting system is enabled which plots graphs according to the data received from the outdoor unit when needed. The hardware part of it is the outdoor unit where the sensing instruments come in. Main functions of it are humidity, temperature, wind direction and wind speed monitoring. With the help of this economically profitable, reliable and flawless machine, Anyone could find the weather of any place and with any time criteria. E.g. a day, a week with this system.

Project Code: CompSc-02 (Team) Online ID:882

Title: AUTOMATICALLY SHIFTING ROAD DIVIDERS - A REAL TIME TRAFFIC MANAGEMENT SYSTEM

Name: Unnat Ramjiyani & Surina Jaidka Std: 10

Guide: Radha Kumari

School: Amity International School; Pushp Vihar

ABSTRACT:

Introduction-

In today's world, traffic jams are a major issue in the urban societies.

To prevent such time consuming and polluting incidents, we present to you, "Automatically Shifting Road Dividers".

This project is completely new and innovative and has the potential for greater success and the betterment of any country.

Model Mechanism-

There are two mechanisms which are required in order for the divider to shift:

The motors in order to move the divider.

The sensors in order to sense the traffic.

The ultrasonic sensors are present on the opposite sides of the road.

These sensors sense the traffic near them and send the information to the main CPU in the underground system.

The CPU processes the information and gives instructions to the motors in order to move the divider.

This divider is autonomous and can even be controlled manually if required.

This gives a perfect and safe divider that can be installed on any road with very little expenditure.

What does it do?-

The divider moves horizontally on the road, thus, decreasing the width of one side of the road and at the same time increasing the width of the other side.

When the divider is moving, the street lights present on that divider start blinking in order to indicate the movement of the divider to the vehicles on the road.

These dividers also have a special feature which consists of special built-in buttons

in emergency vehicles like ambulances, police cars, fire brigades, etc.
These wireless buttons move the divider in whichever side the driver desires but these would not work if there is traffic on both sides of the road.

Specifications-

Width of Divider – 3 feet

Height of Divider – 1 feet

Length of Divider – 50 feet

According to standard cost of concrete, each divider will cost ₹ 12500 (approximately).

Once ready and functional, the cost of maintenance of the dividers is minimal and the cost of labor and maintenance of the traffic will also reduce drastically.

Future Scope-

These dividers can be installed on any road.

The ability of having an autonomous as well as a manual mechanism, reduces the risk of any accidents.

The emergency vehicles will be able to move and save a lot of lives.

Project Code: Energy-01 Online ID:833

Title: Dynamic shoezz

Name: shreyas.uday.kapale Std: 9

Guide: uday.kapale

School: KLE international school belgaum

ABSTRACT:

Dynamic Shoxx

The main idea of this machine is, It can generate electricity by just walking, by this we can charge our mobile phones or any other devices; even you can start a torch or a fan.

This machine can be used where there is no electricity supply ex some villages, forest ect

It can be used day and night as solar energy cannot be used at night, it can be a huge advantage for the people who are living or trapped in forest where there is no electricity

Principle

In this machine there is a crank which moves upward and this happens when we push the ground downward(when we move forward)it is based on the mechanism of hand pressed dynamo torch

when we move we apply a force of ground thus because of that the crank moves upward

and then motor rotates one turn and the then when we lift our led crank comes into its normal position and thus again one rotation completes(motor)

so this continuous process produces energy then this energy is send to mobile charger thus any mobile attached to the the charger charges and this all is just done by walking,not only we can charge the phones but also we can use it for other appliances.

Project Code: Engg-01 (Team) (Jr) Online ID:580

Title: Medicine Alarm System with Messaging Facility

Name: Sharanya Narayanan & Srujitha Venkata Bade Std: 8

Guide: Suryanarayana Rao S.R

School: Sishu Griha Montessori and High School

ABSTRACT:

Medicine Alarm System with Messaging Facility is designed to help people suffering from chronic ailments and need to take prescribed medicines at different predefined intervals during the day.

The system comprises of the following components which are mutually connected:

1. Medicine cabinet with four separate compartments to store different medicines for each interval.
2. Visual alarm with LED lights for each compartment.
3. Common audio alarm with a buzzer.
4. Power backup for 4 hours with 12 volts battery.
5. Programmable Micro-Controller with a real time clock.
6. Messaging system connected to communication network.

Working Principle:

Prescribed medicines are placed in the respective compartments of the cabinet sequentially from first dosage of the day to the last dosage.

Ten minutes before the dosage time, the respective LED light glows and the buzzer rings indicating that it is time for the medicines to be taken.

If the patient forgets to take the medication on time, after two minutes, the system sends a text message to the caretaker indicating that the respective dosage has been missed.

If the patient responds by pressing a response button after taking the specific dosage, no message will be sent to the care taker.

The process is repeated for subsequent doses during the day. The alarm and messaging pattern repeats itself automatically, every day to ensure that the prescription is followed unless the time settings are changed based on changes in doctor's prescription if any.

We have received provisional patent on 25th Aug, 2014.

Project Code: Engg-02 (Team) Online ID:672

Title: Eco-friendly pulpy material from coconut husk and waste paper

Name: Saradva Kinjal S. & Kanani Jahnvi J. Std: 10

Guide: Joshi Apeksha

School: Shree G.K.Dholakiya School; Uni.Road;Rajkot

ABSTRACT:

Waste management has become a major issue for the authorities to deal with, in rural and urban areas. There are many types of wastes, which can be broadly dividing them into three categories - 1. Solid waste. 2. Liquid waste. 3. Air pollutants. Solid waste can further be divided into two categories – 1. Bio-degradable. 2. Non bio-degradable. It is very difficult to get rid of paper waste. So in order to decrease paper waste, we have made disposable material from coconut husk and waste paper. This would not only help in decreasing the use of ‘use and throw’ articles but would also decrease paper waste. We have used waste paper, coconut husk powder and guar gum powder. We have compared our material with market product and found that our material is eco-friendly. We have also checked it in laboratory for moisture, total ash, migration test, water absorption, oil absorption, pH, soil degradation, heat transfer. All the above tests have been acceptable. We have standardize binding agent with rice flour, corn flour, Aloe Vera gel, wheat flour, edible gum and finally from that guar gum is the best binding agent. The process of making material is very simple. To give extra strength to the material, we have used husk of coconut. Comparison of our product and standard product(market product)

Our product : Heat transfer after one hour 33C, water absorption after 24hour 3.2ml, total ash 2.30%, moisture-24.56%, Max. stress -3.6MPa, soil degradation time-144hour, migration test-Nil, Oil absorption-23.25gm, cost-1.67 Rs.par plat.
Standard product : Heat transfer after one hour 40C, water absorption after 24hour 2.8ml, total ash 2.30%, moisture-24.56%, Max. stress -2.9MPa, soil degradation time-160hour, migration test-Nil, Oil absorption-30.85gm cost-1.00Rs.par plat.

Project Code: Engg-03 (Team) (Jr) Online ID:765

Title: A DETACHABLE DEVICE THAT MAKES IT POSSIBLE TO PADDLE A BICYCLE WITH ONE FOOT ONLY.

Name: SHUBH DHOLAKIYA & MOHIT PANCHASRA Std: 8

Guide: MITUL DHOLAKIYA

School: Shree G.K. Dholakiya School - Rajkot

ABSTRACT:

We have designed and created a detachable device which can be clamped to the frame of an ordinary bicycle so that a person who has lost one leg (either due to congenital defect, injury or surgery) can also ride it.

This device can be fitted to the main frame and the paddle of the bicycle, either to the left or to the right, according to the need of the rider. The rider pushes the

paddle with his good leg for half the rotation. The energy provided by the rider gets stored in the spring of the device which then releases that energy to perform the remaining half of the rotation.

This detachable device consists of a spring, a piston, a shaft, etc.

This device can be fitted to the frame of the bicycle either to the left or to the right side hence it takes about 10 to 15 minutes to fit it. The main feature of this device is that it does not involve making any alterations to the bicycle itself in any way. Thus it doesn't require any extra expenditure and time. All you need is an ordinary bicycle. Since the device is detachable, it can be detached from the bicycle quite easily. And then the bicycle can again be used as an ordinary bicycle.

The entire device is constructed using stainless steel, so that it is light in weight (about 650g.). Its light weight ensures that the bicycle doesn't become unduly heavy and thus in this way the rider doesn't have to waste energy in carrying along an extra heavy load, while riding the bicycle. The device is simple and hardly requires any maintenance. Our experiments with the device have shown that it is possible to operate a bicycle fitted with this device quite comfortably, even when an effort of less than 5 kg is applied.

The following data related to the performance, measurements etc. is attached herewith.

1. Measurements of the bicycle.
2. Drawings of the detachable device, along with measurements.
3. Details of the spring constant of the spring used in the device.
4. Information regarding the time taken to cover different distances by different riders while riding a bicycle fitted with or without this device.

Project Code: Engg-04 Online ID:808

Title: Technology up gradation for preparing Medicinal charcoals by slow pyrolysis in Masi Maker

Name: Ahalya Saraswathi Bhat J. Std: 9

Guide: Dr. Jeddu Ganapathi Bhat

School: Vittal Jaycees English Medium School; Basavana Gu

ABSTRACT:

Medicinal charcoals known as Masi Kalpana in Ayurvedic medical science is prepared by partial burning of medicinal herbs. Burning herbs into charcoal has a wider use in preparing medicinal oil, ointments and pasts. Detail description is available in ancient texts like Charaka Samhita (200 B.C), In olden days, herbs were burnt slowly in a open earthen pan into charcoal. It is found that pyrolysis is the change taking place during this process.

Pyrolysis is a thermo chemical decomposition of organic material at elevated temperatures in the absence of oxygen and is irreversible. Pyrolysis of organic substances produces gas and liquid products and leaves a solid residue richer in carbon content, char.

We noted that preparing medicinal charcoals is a crude process resulting in greater loss of herbs and less productivity. So to upgrade technology we developed an instrument called “Masi Maker” which uses the principle of slow pyrolysis.

The working model consists of three main chambers. 1. The heating chamber: for heating the herbs. 2. Charring chamber: for preparing the medicinal charcoal. 3. Bio- oil outlet: to drain any bio oils as byproduct.

The instrument can be effectively used in production of medicinal charcoals, special oils and incinerated harbo-mineral medicines. These medicines are widely used in Ayurvedic, Unani and Siddha medicine since time immemorial. Apart from this the process of pyrolysis has wider application in waste management, production of bio-diesel, fertilizer industry and many more such application is possible.

Project Code: Engg-05 (Team) Online ID:812

Title: Affordable Farmers Friendly seed Sow Machine

Name: Chetan Yalawatti & Chetan Mundaragi Std: 9

Guide: Sadiq S

School: Smt Ningamma S Hugar High School Annigeri

ABSTRACT:

Background: Traditional seed sowing methods include broad casting manually, opening furrows by a country plough and seeds by hand, known as 'Kera', and dropping seeds in the furrow through a bamboo/metal funnel attached to a country plough (Pora).

In manual seeding, there will be several issues to be tackled like it is not possible to achieve uniformity in distribution of seeds, poor control over depth, time and labor etc..

We thought of making simple low cost durable seed sowing machine for farmers. This machine works on a very simple principle of pressure; it is constructed in such away that when handle is pressed iron rod pierces into the ground making a 3”hole and seed falls into the hole, as soon as machine is removed hole is refilled with soil.

An average farmer can sow 100 seeds in 9 minutes with this machine can sow Machine weights about 2kg, easy to work with and cost wise affordable by average farmer.

Conclusion:

- This machine can be affordable by all farmers, and can be used by any person irrespective of gender or strength in the field
- This machine can be affordable by all farmers as its manufacturing cost is low
- And can be used by any person irrespective of gender or strength in the field

as it's light weight

Future Scope:

- Willing to use for the different monocot and dicot seeds in the farm.
- Will try on the different soil types
- Willing to try in different climatic conditions

Project Code: Engg-06 (Team) Online ID:974

Title: A new technique for drying and extracting liquid from fruits and vegetables

Name: Kajol Rajesh Shelke & sakshi Kesav Prasad.Pandey Std: 9

Guide: Raji Nair

School: Nmws High School;Ghatkopar;Mumbai

ABSTRACT:

The preservation of vegetables and fruits after harvest has been practiced since antiquity. Traditional methods of sun/solar drying has some limitations. . In sun drying method makes the fruits and vegetables very hard in oven method it completely dries.

Till date we have no technique to collected the water after fruits and vegetables/fruits were dehydrated.

In our project we have made an attempt to make a protocol type machine with simple technique which works on Electricity. A discarded oven was brought under use by repairing it and converting it to dehydrator. It has horizontal air-flow instead of vertical, where the fan and the heating elements are on the sides of the unit. This creates even - drying. Adjustable thermostat is used to control temperature.

No of trails were conducted and compared with oven drying and sun drying .some of the vegetables/fruits used were chickoo, orange, banana , potato, ladyfinger and ,fenugreek leaves .

The fruits and the vegetables were washed and cut evenly and kept on drying mesh tray in the dehydrator .Set the temperature to 65 degree C to 70 degree C .After 3-4 hours moisture is collected in the airtight jar through a pipe. Dehydrated fruit and vegetables are kept in open air for 10 minutes and then packed loosely in airtight glass or plastic containers and stored in a cool dry place.

The moisture content collected from fruits and vegetables was 80% to 95% .We also tried to condense it and have tested it for its nutritive value which is very high.

Removing moisture from fruits and vegetables not only preserve but also extend their shelf life. It restrains various bacteria from growing and spoiling fruits and vegetables .

It can be concluded that the present method was the best method for dehydrating of fruits and vegetables . There was better retention of nutrients like protein,

carbohydrates, crude fiber, minerals and dehydrated characteristics as compared to the oven and sun drying methods.

If implemented properly, Agro dehydrator will be a great boon especially for the rural areas to increase their per capita income and their standard of living.

Project Code: Engg-07 Online ID:1001

Title: Cooling panels for sunfacing walls in Buildings

Name: Vaishnavi Thakur Std: 9

Guide: Anjali Saxena

School: Amity International School; Sec-46; Gurgaon

ABSTRACT:

I have tried to incorporate the traditional knowledge with modern technology to come up with simple, cost effective, sustainable and low maintenance solutions to maintain the internal temperature of buildings

Concept: I have combined here the concept of double wall, Low- E Glasses and the mud shakoras (an item of baked clay which is in a curved shape.).

As model representation, I have taken a wooden piece whose center portion is cut out and leaving over only the edges. Knocking a nail on each corner, I placed a low E- coated Glass on it. Over this, I pasted shakoras in a pattern.

There is a one pipe which has holes at equal distances through which water will be circulated and one pipe below which would collect the fallen water.

Water would escape from the holes and as it escapes, it would spill over the shakoras, giving it a beautiful waterfall effect. In this process, each shakora would absorb some water, and as it is made up of mud and clay, it would get cooled

thus causing a cooling effect to occur due to evaporation.

This concept can be commercialized and used on windows or walls for cooling.

2x 4 ft panels which can hang by hooks on horizontal rods using specially designed mud plates or more durable material such as pumic stone which is light and porous can be made.

Project Code: Engg-08 Online ID:1053

Title: TAPIOCA PLUCKING MACHINE

Name: PAVITHRA R Std: 9th

Guide: PREMNATH N

**School: SRC MEMORIAL MATRIC HIGHER SECONDARY
SCHOOL;NALLUR**

ABSTRACT:

TAPIOCA PLUCKER

INTRODUCTION

With the help of this machine, we can easily harvest tapioca and remove unwanted plants, without using power and much energy.

CONSTRUCTION

The machine is fit with 2 jaws which can be opened and closed. These jaws will help the machine to hold the plant tightly. Along with this 2M length pipe also will be connected. 2 wheels also attached with this machine to move from one place to another place easily. We can mantle and dismantle this machine whenever required and wherever we want to take. It is easy to carry anywhere.

WORKING PRINCIPLE

Archimedes Principle – Fulcrum 3rd law

Load x Load arm = Power x Power arm

WORKING

By using this machine, we can harvest tapioca and remove unwanted plants. If we harvest tapioca we have to keep the stem of the plant in between the 2 jaws and make the jaws hold it correctly. Now press the other end of the iron rod. The jaws will lift the plants upwards. Hence plant which is connected with the jaws will come up and tapioca will be root lifted without disturbing the soil. When you press the other end of the iron rod as strong as you can, the plant will be root lifted without much difficulty.

ADVANTAGES

1. We can easily harvest tapioca
2. No need to use crowbar or shovel etc.
3. Plants can be removed without disturbing the soil
4. The cost of the machine is very low.
5. It is easy to carry any where and it can be mantled and dismantled without any difficulty
6. The machine is made up easily available materials.
7. The cost of machines goes to Rs.1000 /-
8. It saves time.
9. The jaws can be expended if needed.
10. We need not require power and fuel.

Project Code: Env-01 (Team) Online ID:524

Title: Calotropis gigantea-A novel way of treating & repeling Muca domestica

Name: Shivaprasad Bajakkaremoole & Karthik P K Std: 12

Guide: Vishalakshi

School: Vivekananda pu collge puttur

ABSTRACT:

This project aims at the control of household pest "Muca domestica". House flies may seem to be a destructing agent along with as a disease spreading vector. It is an agent that is also responsike for increase in unhygenic environment. It transmits some dreadful dieasease to mankind like Typhoid, Cholera,dysentry etc & even for cattles. Many chemical housefly repelents ate available in the market but these are toxic to human health so there is a need for an effective,eco-friendly and also safe housefly repelent. So this project using a plant source to get rid of house flies

At first 200gm of calotropis gigantea leaves are taken.washed.chopped and boiled with 1000ml of water in about 80-90°c for about 20 Minutes. Then the solution is filtered and thus obtained solution will be a concentrated solution which will be quarter of the initial volume. Thus obained extract can be used is pest control buy just spraying 2or 3 ml at a Time.

The experiments were done on houseflies in order to test the effect of the extract. A blotting papper of 1*4cm was dipped inside the solution for few seconds and was dried while this was kept near a housefly source,no houseflies were seen near its proximal range of around diameter of 4mtrs for next 36 hours.The larve of house flies were collect in an aquarium jaar and was sparyed with the extract and the death of larve was seem simultaneously. The toxicity test was done by taking 10 Earthworms in 1*1mtr tub and was sprayed with 1ml of solution everyday for next 10days. Thus no death of earthworms were seen so its eco friendly(ie cuurently available agents distroy all creatures and harms the biosphere)

Thus obtained result sows that the spray can be used to destroy larve and repel houseflies.

Project Code: Env-02 (Team) Online ID:533

Title: Solar Factory

Name: Darshan S & Sampreeth B Nadig Std: 10

Guide: Ankita M A

School: Hongirana School Of Excellence; Amatekoppa

ABSTRACT:

Purpose of experiment:-

Now a day's one of the major problem people are facing is lack of drinking water. As there is lots of sea water in the atmosphere to solve this problem we have planned a model which completely works on solar energy and it has the capacity to

convert sea water into pure drinking water.

Procedure

We have taken an aluminum utensil which is connected through a copper pipe attached with condenser to a utensil. These parts are the heart of the model and these are kept on a base – the top of the aluminum utensil is covered by a convex lens. A Death Ray pointed to the body of the aluminum utensil. Is used to produce more heat using solar energy. This is the view of the model.

It works as follows

*)First the seawater is stored in the aluminum utensil, due to the converging of sun rays by the convex lenses the water in the all utensil starts boiling and even we have used the death ray to increase the rate of boiling, as a result water converted in to water vapor.

*) This water vapor passes through the copper pipe, condenses due to the condenser and enters the other utensil. To the obtained water we add the required quantity of solute obtained and make it suitable for drinking.

Result

By this model the places there is lack of water. We can supply water for this. We should especially setup this type of factories near sea.

Project Code: Env-03 (Team) (Jr) Online ID:534

Title: AN ENVIRONMENTAL FRIENDLY PRODUCT TO PREVENT MOSQUITOS AND ITS LARVA

Name: Chandana Shankar & Kumkuma Shankar Std: 6

Guide: Shankar Bhat P.

School: Sudana Residential School; Puttur D.K.; Karnataka

ABSTRACT:

Developed and under developing countries facing many types of diseases like malaria, dengue etc... Which are spread by mosquitoes. To prevent these mosquitoes people using commercially available mosquito coils which cause health hazards like allergies etc.

So, here we are introducing eco friendly product to destroy mosquitoes, its larva and some small insects. Purpose of this work is to replace the use of chemical products (Like coils, spray and etc) by our natural eco-friendly mosquito repellent product.

General information's and properties of many natural products were collected through discussion with resource persons. Based on this we have scientifically produced a Bio-spray which can reduce above mentioned problems. Materials involved in the preparation of this spray are Strychrios nux vomica extract, Euphorbia neriifolia extract and cashew nut shell extract.

As per the result obtained it is proved that when compared to commercially available chemical sprays, this spray is highly effective on mosquitoes and its larva. It is not harmful to health and it is non toxic. By going through our all

experiments we considered that this natural spray is very useful, bio-degradable, eco-friendly, natural product, farmer friendly, pollution free, economically feasible, without harming animal kingdom. By cost also it is cheaper because the used himself can prepare the spray.

Project Code: Env-04 (Jr) Online ID:568

Title: An Easy and Cheapest technique to mass produce Bio Degradable Nursery Pots

Name: Vismaya Devasya Std: 7

Guide: Lakshmana Devasysa

School: Kumaraswamy Vidyalaya Subramanya

ABSTRACT:

Plastic bags are extensively used for growing nursery plants. Failed plants are thrown just like that along with the plastic bags. Also during planting the removed bags are left in the farm. These bags mix with the soil creating lot of nuisance. My invention is aimed at finding an alternate solution for these plastic bag problems. I have invented a new method to make bio-degradable pots to replace the plastic bags. I have employed banana stem, waste gunny bag and cow dung as the raw materials. Unlike plastic bags these bio degradable pots serve as manure once it is planted. Means the pot is consumed by the plant as manure after planting in the soil. The mass production and the cost factor also considered in making these pots. After few trial, I have arrived at a method to produce bio degradable pots and grown the nursery plants successfully.

Project Code: Env-05 (Team) (Jr) Online ID:677

Title: Biological Control of Mosquito Larvae

Name: Varsani Gracy J. & Donga Nancy K. Std: 8

Guide: Apeksha Joshi

School: Shree G.K.Dholakiya School

ABSTRACT:

In our country there are many problems which are affecting people substantially on health and economy. Rural population is mainly affected by transmitted diseases due to two reasons; one is lack of cleanliness and knowledge on health and hygiene. The major goal behind my project is to kill larvae using extract of marigold flower which is of low cost and easily available. Eradicating mosquito directly is a difficult task; there are repellents which repel mosquitoes, but its population is not decreased. The major advantage is that are found in a mass at a single point where as mosquitoes are spread all over. The solution has been prepared using marigold's flower and made into three concentrations 25%, 50% and 100% was tested on different quantity of sample with the constant number of larvae. The concentrated marigold flower solution gave good results. This can be

sprayed at the stagnant water and at the blocked drainage.

Project Code: Env-06 (Team) Online ID:698

Title: ECO-PCP FILTERS (Pollen Cum Pollutants Filters)

Name: DHANUSHREE.P & LAVANYA HEMANTH Std: 10

Guide: Mrs.ANITHA SUKHDEV

**School: VAGDEVI VILAS SCHOOL ;MARATHAHALLI POST
;BANGALORE**

ABSTRACT:

ECO- PCP FILTERS
(POLLEN CUM POLLUTANTS FILTER)

Our aim is to develop an Eco friendly / all natural facial, nasal filter which can be set for house hold air conditioners also. The filter is designed to eliminate:

- * Pollutants
- *Pollen grains and
- *other impurities

The filter is scientifically designed with layers of different material placed sequentially, which allows filtration of air before being inhaled. This filter is flexible and can be made in different shapes, colours and sizes to meet the users comfort and benefit. All the material used are 100% natural and biodegradable.

*1st layer: It is made of knitted wool which has fine pores which attracts dust and pollen grains due to its electrostatic force.

*2nd layer: It has activated carbon which absorbs pollutants, bacteria, fine pollen grains, fine dust particles, soot particles and bread moulds due to its strong chemical bonding.

*3rd layer: It has activated charcoal that absorbs chlorine and harmful odors due to its strong chemical bonding.

*4th layer: It has a layer of thin cotton which only lets fresh air to pass through it.

All the 4 layers are enclosed in a skin color cloth which can be worn as a mask. The whole set up can be slightly modified and sandwiched in a thin, firm mesh support and fixed in AC unit. We also intend to add an additional feature for AC, which will have a source for UV radiation to kill germs in the air entering the room.

Project Code: Env-07 (Team) Online ID:942

Title: To study the effect of coffee spent ground on insects- mosquitoes

and hairy caterpillar

Name: Deep Amit Mehta & Mayur Mohan Iyer Std: 9

Guide: Ms. Nalini Nainar

School: Nmws High School;Ghatkopar;Mumbai

ABSTRACT:

Mumbai is now claimed to be the malaria capital of India, with nearly 9,000 cases reported over the past 14 days . Extreme weather during the monsoons has exacerbated the issues. The pesticides and insecticides being used these days are causing a lot of harm to human beings as well as to the environment. Thus, the initial idea was to find an eco-friendly method to control mosquitoes. The present preliminary investigation has showed that coffee spent grounds has a good larvicidal activity against 2 container breeding mosquitoes Cx quinquefasciatus and Andes aegypti . Cx quinquefasciatus larvae were collected from a backyard puddle. Andes aegypti Mosquito eggs collected from Haffkine Institute..

Experiments were done to study the bio-efficacy of coffee spent ground solution on mosquito larvae, five different concentrations were prepared in 100 ml of water using the grounds (wet weight 0.01, 0.05, 0.10 ,20 and 0.50 g/ml, respectively. The controls had no grounds. 25 larvae were placed in the solutions (control and 5 treatments for both water types). The mean mortality was 80% for Cx quinquefasciatus larvee and 91% Andes aegypti larvee when compared to the control. It was 85%and 88% for adult Mosquito. Repellency rate for Coffee spent ground paint was 94% compared to the control and mortality rate CSG mats was 90% 60% in Azadirachta indica leaf extract and 20% in good knight after 24 hours.

Experiments conducted on hairy caterpillar showed a mortality rate of 95% Mortality rate The `t` test value 16.9 and 15 with 4 degree of freedom is considered significant. samples of coffee spent ground and solutions were analysed by HPLC for their respective caffeine content. Caffeine was most likely the compound toxic to Cx quinquefasciatus and Andes aegypti Our product being completely bio-natural, easily available and cost effective does not cause any harm to animals, human beings, environment.

Project Code: Env-08 (Team) (Jr) Online ID:944

Title: NATURAL DEHUMIDIFIER CUM AIR FRESHNER

Name: S.M.ANSHUMAN & KASHVI SINGH Std: 8

Guide: KRISHNA VENI VEDULA

School: AMITY INTERNATIONAL SCHOOL ; VASUNDHARA ; SEC-6

ABSTRACT:

To prepare a natural dehumidifier cum air freshener.

A device is prepared with dried flower petals (marigold flower) which acts as

dehumidifier cum air freshener.

The device consists of a bag of flannel of about 7cm X 12cm. It contains flower petals with heat pad .Heat pad is required because flower petals will act as dehumidifier for about 5-6 hours. Then they need to be sundried. Since sun drying is not always possible, if they are warmed up by heat pad for 2-3 minutes using source of electricity, they will be charged up to act as a dehumidifier. This device is rechargeable and flower petals once turn yellow can be replaced . Hence it acts as renewable air freshener cum dehumidifier. AN

Research Methodology

A room of 3’x3’x10’ was selected which had natural light and air. No fan/ AC/cooler was fitted in the room. Readings of humidity levels was taken everyday in the morning at 7 am for 5 days. Then substances like dry flower petals (200g) , tea leaves (200g) , Tilandasia (air plant) were kept in the room separately and humidity level was noted after every 30 minutes for atleast 2 hours.

After taking observations, it was found that dry flower petals worked as a best dehumidifier and air freshner.

Observation

Reading for 3 months is taken . Given below is the sample reading for 5 days.

I.a) RELATIVE HUMIDITY AFTER AN HOUR. (FLOWER PETALS)

DAY	WITHOUT PETALS	WITH PETALS	AVERAGE				
	0	1st hour	2nd hour	3rd hour	4th hour		
1	58%	54%	51%	48%	46%	49.75%	
2	62%	60%	57%	54%	60%	57.75%	
3	63%	61%	57%	54%	52%	56%	
4	56%	53%	50%	47%	44%	48.5%	
5	58%	54%	51%	48%	46%	49.75%	

I.b) RELATIVE HUMIDITY AFTER AN HOUR (TEA LEAVES)

DAY	WITHOUT TEA LEAVES	WITH TEA LEAVES	AVERAGE				
	0	1st hour	2nd hour	3rd hour	4th hour		
1	67%	66%	65%	64%	62%	64.25%	
2	63%	63%	62%	61%	60%	61.5%	
3	64%	63%	62%	62%	61%	62%	
4	64%	64%	63%	62%	60%	62.25%	
5	58%	57%	56%	54%	53%	55%	

1.c) RELATIVE HUMIDITY AFTER AN HOUR (TILLANDASIA)
 DAY WITHOUT TILANDASIA WITH TILANDASIA WITH
 TILANDASIA WITH TILANDASIA WITH TILANDASIA WITH
 TILANDASIA

	0	1ST hour	2nd hour	3rd hour	4th hour	AVERAGE
1	64%	63%	62%	62%	61%	62%
2	62%	61%	60%	60%	59%	60%
3	59%	59%	58%	57%	56%	57.5%
4	75%	71%	70%	68%	65%	68.5%
5	73%	70%	69%	67%	63%	67.25%

II.a)AVERAGE RELATIVE HUMIDITY AFTER AN HOUR..

I. WITH DRY FLOWER PETALS (MARIGOLD)S

II. WITH TEA LEAVES

III.WITH TILANDASIA

S.NO.

DAY WITH PETALS WITH TEA LEAVES WITH TILANDASIA

1.	49.75%	64.25%	62%
2.	57.75%	61.5%	60%
3.	56% 62%	57.5%	
4.	48.5%	62.25%	68.5%
5.	49.75%	55%	67.25%

Cost Involved

This project does not involve much cost as flower petals are taken as left over flowers from temples. They were cleaned of other unwanted materials and then dried. The overall cost of the device comes around Rs. 400. The freshner used in cars usually costs Rs.400 –Rs.500 and runs for a period of 45 days only. Therefore this device can be used in cars and is cheap compared to the freshners available in market.

Project Code: Env-09 (Team) Online ID:949

Title: Air Conditioning Umbrella

Name: Kavya Aggarwal & Akriti Dhasmana Std: 9

Guide: Ekta Soni

School: Amity International School; Vasundhara; Sector-6

ABSTRACT:

Objective

To design low cost portable cooling device “khus umbrella” that can be used in vendor carts.

Methodology

For the basic design we made use of an umbrella for preparing the framework of our product. We prepared a roof that is made the top of the umbrella with khus grass {vetiver grass}

Khus has been specifically used for this purpose because it is known for its cooling properties. We then had to attach the drips through which the water was going to travel to the roof and wet the grass. For this a metal rod was used to which for circular rings were welded. The bottles attached to the drips were then placed in those four rings and the pipes diverted in four different parts of the umbrella. This rod has to be attached to the top of the umbrella when in use and can be removed from the top when not in use. There is a small valve which comes attached with the pipes used in the drip which makes it possible for us to manually regulate the flow of water that will be released by the pipes.

When this umbrella will be used on a hot day outdoors, the water will evaporate from the roof, leaving a cooling effect in the umbrella’s surroundings.

Observation

We practically tested this umbrella to see whether any difference was observed in the temperature, relative humidity between the open surroundings and beneath the umbrella.

For this the umbrella was setup and accordingly readings were noted after regular time intervals during a day to see the difference.

Observation table

For temperature difference

Days	Time	Air temperature	Temperature beneath umbrella	Difference
Day 1	9am	350C	350C	Nil
	9:15 am	350C	33.50C	1.50C
	9:30am	350C	310C	40C
Day 2	12 noon	340C	340C	Nil
	12:15	340C	320C	20C
	12:30	340C	300C	40C

For relative humidity

Days	Hot thermometer	Wet thermometer	Relative Humidity
Day 1	Air 330C	320C	93%
	Under umbrella	340C	320C 87%
Day2	Air 340C	320C	87%

Under umbrella 33°C 30°C 81%

1. REPRESENTATION OF DATA FOR DAY 1

2. REPRESENTATION OF DATA FOR DAY 2

Result

Temperature difference-

We observed a difference of 3-4 degree Celsius in the air temperature and the temperature beneath the umbrella. Thus the umbrella was working in the way it had been conceptualised.

Relative humidity-We observe a considerable difference in both the situations.

Although the grass is being wet constantly still the region beneath umbrella doesn't become too humid because its structure allows for proper air circulation and thus the relative humidity is lesser beneath the umbrella than in its surroundings. Also it gives a relief to the fruits and vegetables from warm air (loo).

Cost involved

The umbrella used for coming up with this product was an old unused piece. Cost incurred was on coming up with the rod to be attached at the top which had to be welded. The drips were arranged from hospitals and the pipes were reused from previous project based work. Grass used for the roof had to be arranged from the market. The wooden base created to make it stable was made out of unused pieces present in our houses. Thus this product was made with minimum expenditure on its components and maximum utilisation of old, not in use products.

Project Code: Physics-01 (Team) Online ID:1051

Title: Radio Control Robot

Name: Rahul Krishna Patil & Sandesh Manjunat Karlikar Std: 10

Guide: Shrikant Chulki

School: M.V Herwadkar English Medium High School;Belgaum

ABSTRACT:

R.C robot is an automatic mechanical device often resembling a human or animal. It is an electro mechanical machine guided by a computer program or electronic circuit.

This is an electronic circuit robot. It contains approximate 9 gear motors and 10 DC (Direct Current) motors. The gear motor has the capacity to hold 1 kg weight.

The DC motors are used for fingers to pick a object or a thing.
The robot will rotate 360 degree containing 6 tyres and 8 5 volt adapters.
It contains robot belt which is placed around the tyres as it provides a support for the robot to travel on stones , mud .
The 2 tyres will generate electricity containing gear and DC motors.
It also contains a scissor hand which is removable as it helps to defuse the bomb.
The body of the robot is made from liquid fibre which is moulded from plaster and the fibre is fire proof.It contains a walkie-talkie system which helps to receive the voice from any language and in-turn gives same output.
It also has a wireless camera which is useful in defusing bombs.