

Abstracts



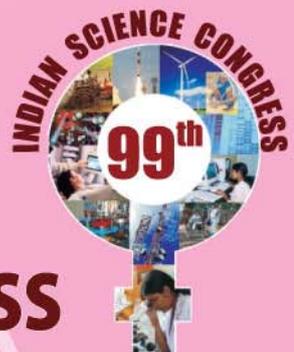
**Rashtriya Kishore Vaigyanik Sammelan**  
**The Children's Science Congress**  
4<sup>th</sup> January 2012



**99<sup>th</sup>**

**3-7 January, 2012 - Bhubaneswar**

**INDIAN  
SCIENCE  
CONGRESS**



**KIIT University & NISER**



**Kalinga Institute of  
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Bhubaneswar, Odisha

*Proceedings  
of the*

**NINETY NINTH SESSION OF  
THE INDIAN SCIENCE CONGRESS**

**RASHTRIYA KISHORE VAIGYANIK SAMMELAN  
4<sup>th</sup> - 6<sup>th</sup> JAN 2012**

**Editors**

**Dr. K G Mishra  
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Ms. K Kar**

Organised by

**KIIT UNIVERSITY, BHUBANESWAR**



**Dr. A. Samanta**  
**CHIEF PATRON**  
Indian Science Congress-2012

I am delighted to know that for the first time in Indian Science Congress, proceedings is being published that is highlighting the best projects and models exhibited by the child scientists in children science congress, which have been selected through rigorous evaluation processes by different committees from across the country. In this Rashtriya Kishore Vaigyanik Sammelan, students from every part of the country have participated and they are able to show case their scientific innovations to a plethora of research scientists and educationalists .

This Kishore Vaigyanik Sammelan, hosted by KIIT University and NISER, I strongly believe that it will bring an innovative scientific tempo among the future scientists, our child participants to develop their research activity.

I wish the sammelan a grand success.

A handwritten signature in blue ink, appearing to read 'A. Samanta'.

**Dr. A. Samanta**  
**CHIEF PATRON**  
Indian Science Congress-2012



**Prof. A.S. Kolaskar**  
**Organising Chairman,**  
99<sup>th</sup> Indian Science Congress 2012

I welcome all the scientists in the making and their teachers who are participating in the Children's Science Congress, which has become an important and integral part of the annual Indian Science Congress meeting. Innovation is key to the progress of human race and an important factor in the development of a nation. This event identifies innovators from every nook and corner of India. The selection process is rigorous requiring the contestants to overcome competition in several stages starting at the school level and culminating at the state level. Thus, only the best from each state are invited to participate in this congress. I hope that the interest of these bright minds in science will be sustained and nurtured by their respective schools, parents and society to ensure that they will become top notch scientists and technologists in the world. This is especially important in the face of the global trend of fewer and fewer people opting for a career in science.

I take this opportunity to congratulate the Department of Science and Technology for supporting this activity and making it an important national event. My best wishes to the students and teachers who have come here and hope that they will enjoy the Science Congress and will be able to meet scientists of high stature including some of the Nobel laureates which will inspire them to achieve excellence

A handwritten signature in blue ink that reads "A. S. Kolaskar".

**Prof. A.S. Kolaskar**  
**Organising Chairman,**  
99<sup>th</sup> Indian Science Congress 2012



## MESSAGE

National Children Science Congress (NCSC) is one of the unique campaign of the country to encourage natural curiosity, creativity, scientific temper and problem solving skills on local area problems amongst children of 10 to 17 years age. It also helps them to learn science by doing projects involving field work and open ended experimentation. It developed team spirit and collective learning among the child scientists.

Best two projects of NCSC has been selected by each State and Union Territories of India to participate in 99<sup>th</sup> Indian Science Congress to be held in KIIT University. Best projects from NCERT are also participating in this event. This innovative project will give inspiration to other children of host state to be creative in that mind and contribute in local area research.

My whole hearted and sincere thanks to the child scientists and escort teachers participating in Indian Science Congress – 2012.

**Dr.R.N.Ray**  
Chairman, B.J.G.V.S  
& Chairman NCSC, Odisha

Date: 27-12-2011



**Dr. S. Samanta**  
**LOCAL SECRETARY,**  
Indian Science Congress-2012

It is quite interesting to have proceedings on the projects displayed by the children from all around the country. This proceeding will be the source for many children to develop their innovative skill and encourage them for scientific research.

This Rashtriya Kishore Vaigyanik Sammelan 2012 will act as a pathway to spread the essence of knowledge among our children. On behalf of the organizing committee, I congratulate all the child scientist and their teacher guides for their success .

**Dr. S. Samanta**  
**LOCAL SECRETARY,**  
Indian Science Congress-2012



**Dr. B.B. Kar**  
**Principal Coordinator**  
**RKVS-2012**

Rashtriya Kishore Vaigyanik Sammelan 2012, organized in KIIT University in collaboration with NISER will provide the biggest scientist platform for the student innovators to develop a scientist mind set among them. The school children participating in this 19<sup>th</sup> Children Science Congress during 4<sup>th</sup>-6<sup>th</sup> January, 2012 will get the opportunity to interact with different intellectuals from all parts of our country.

This proceedings, agglomerating all the scientist innovations, will provide a strong foundation for our child scientists to develop more with their creative temperament.

I sincerely convey my regards and well wishes to all the participants of Rashtriya Kishore Vaigyanik Sammelan 2012 for the success of this unique congress.

**Dr. B.B. Kar**  
**Principal Coordinator**  
**RKVS-2012**

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KIIT UNIVERSITY, BHUBANESWAR, 2012

**RASHTRIYA KISHORE VAIGYANIK SAMMELAN**

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## **Motor Oil Filter**

*Deksha Kumari, Varsha Ganesh, A.B.Sheeba, Ruby Jolly Tirkey and  
Jasmines. S. Joseph  
Govt. Girls Senior Secondary School, Port Blair,  
Andaman & Nicobar Islands*

### **Abstract**

Purifying used motor oil can be a great way for economically minded consumers to reduce the costs of vehicle maintenance. In addition to its financial benefits, reusing motor oil contributes to maintaining a clean environment by reducing the amount of discarded pollutants. In this innovative model, we tried to create our own bypass filtration system with locally available materials.

This works on the principle of filtration and purification.

### **Materials Required:**

Container A: Container with 7 inch diameter – 3 nos.  
Container B: containers with 3-4 inch diameter – 2nos  
2 Diffuser tube or nay minute porous plastic/metal cylindrical tube with 1-2 inch diameter  
Transparent plastic tube around 3-4 meters long  
Stoppers-4nos  
Saw dust  
Activated Char Coal  
Oil filter of any vehicle  
Used motor oil from Garages and workshops

Pour the used motor oil into the hole created inside the saw dust, the oil will now get filtered through the saw dust from here the oil goes into the hole created in-between the charcoal, from here the oil again gets filtered and passes through the oil filter used in vehicles. The used motor oil has now passed through 3 different stages of filtrations. In the saw dust layer all the heavy impurities are eliminated, and through the layers of coal again smaller impurities as well as other chemical impurities get filtered and absorbed. Finally once the oil passes through the last filter the oil is free from all types of impurities and is ready for reuse. After using this filter for some time the sawdust and charcoal would no longer filter anymore used oil, at this point we could replace it again as they are readily available. The used sawdust and coal can be used for burning and can also be used against termites while constructing wooden buildings/protection layer for wooden poles.

## **Science and Technology for Challenges in Life**

*N.S.S. Sahithi*

*Good Shepherd E.M. School, Nandyal/Unaided, Andhra Pradesh*

### **Abstract**

**Automatic Sowing Machine:** Micro controller ATMEL 895 C1 is used. When the input is given to the key board, the micro-controller drives the first stepper motor which is used to drive the vehicle that carries the sowing machine in forward and backward directions. The micro-controller energizes the two relays which run the two d.c motors that help in sowing seeds in the horizontal direction. The micro controller also energizes the solenoid valve used to close and open the seeds pipe. After this, it energizes second and third stepper motors which are connected in series at the wheels to sow the seeds in the next row.

**Automatic Plant Watering System:** Micro-controller ATMEL 895 C<sub>2</sub> is used. There are three keys for three different purposes like pumping, spraying and to empty the tank. Whenever a key is operated, the system starts moving with the help of d.c motor, which is activated through relays. Whenever the system reaches plant it gets a signal from the I.R. sensor, then the system stops and with the help of other d.c motor, it starts pumping. After pumping for all the plants, it takes its home position automatically

#### **Working of the Exhibit:**

- **Automatic sowing machine** - When we switch on the power supply, the device checks its home position. Now as per the input given, the sowing machine sows a seed at its home position and then it continues to sow in a horizontal direction. After completion of a row, it sows the seeds in the next row. The process continues till we switch off the power supply.
- **Automatic Plant Watering System:** When pumping key is operated, the system identifies the plant with the help of sensors and pumps water for a particular plant. In the same way spraying can also be done. There is also another key to empty the water from the tank which is a manual operation key

**Principle Involved:** Transformation of Electrical energy into Mechanical Energy

#### **Applications:**

- a)
  1. Uneven planting can be avoided
  2. Large area can be covered in less time
  3. Distance between the two seeds can be maintained accurately
  4. Lot of man power can be saved
- b)
  1. Conservation of water and pesticides.
  2. Pumps the water and sprays the pesticides for a particular plant.

## **A Study on Ways for Reclamation of a Garbage Dump Site Called Uracheruvu**

*P.L.N. Mani Kumar, S.Jaswanth Babu, S.H.S.M Aditya,  
V. Muarari and G Yashwanth Dayanidhi  
Saibaba Central School Saibabuji Nagar, Ongole- 523001, A.P.*

### **Abstract**

Uracheruvu is a municipal garbage dump site situated in the heart of Ongole town, which is the capital city of Prakasam district in Andhra Pradesh. Till 1980, it was used as a fresh water source for the population. Newer fresh water storage tanks, such as the RR tank and the summer storage tank, later substituted it. From then on Uracheruvu has been a victim of gross negligence by the municipal authorities. Its source rivulets have been cut off. Its catchment area has been encroached on by unauthorized welding and painting shops which release their waste containing zinc and lead dust into this disused tank. All the sewers from nearby unplanned residential and commercial areas are draining into the water body. The water from Uracheruvu is seldom used for drinking. But due to constant pollution, the polluted waters of Uracheruvu are seeping into the groundwater aquifers. Recently, municipal authorities have converted it into a garbage dump site, which has an adverse effect on the health of people living in the vicinity of that area. The place is choked up by disposed used coconuts, which are good breeding sites for mosquitoes. Plastic and polythene bags are directly disposed here instead of recycling. The effects of this dump site are telling on the health of nearby residents. Hence it is high time steps are taken to rectify these problems.

### **Our Project Aims at**

Reducing the risk of soil and ground water pollution by the heavy metals in the dump site, to find an eco-friendly way of disposing the biodegradable wastes into the dump site, to find a feasible alternative to the polythene bags to avoid or minimize plastic pollution.

A biogas plant was proposed to be constructed to avoid disposal of biodegradable wastes into the dump site. The Water Hyacinth plants were also proposed to be used in the bio gas plant after they have bio accumulated the heavy metals from the dump site. The ability of Water Hyacinth to produce good amounts of bio gas was demonstrated in the laboratory.

The use of bio degradable plastic bags was advocated to reduce the polythene pollution in the dump site. The degradability of the bio degradable plastic bags was experimentally confirmed in the laboratory.

The solutions we suggested for the reclamation of the garbage dump site are: A bio gas plant should be constructed near Uracheruvu for processing of bio degradable wastes and production of bio gas. Water Hyacinth plants should be grown in the water logged area of the site to reduce the heavy metals.

The Water Hyacinth plants should be harvested at timed interval for biogas production. Usage of polythene plastic bags should be avoided. Usage of bio degradable plastic bags should be advocated.

## **Power Generation from Sugarcane**

*Anshu Kumar  
Tirhut Academy, Bihar*

### **Abstract**

**Preface:** - In rural area due to lack of electricity, I have worked on a project which deals with the production of electricity from sugarcane juice.

**Aim:** - Production of electricity from sugarcane juice.

**Theory:** - My system is based upon using sugarcane juice as electrolyte with Zinc plate (cathode) and copper (anode). The carbohydrate in sugarcane gets dissolved and produces different vacancy at cathode and anode.

#### **Requirements:-**

- \* Beaker
- \* Zinc & Copper Plate
- \* Bulb
- \* Sugarcane Juice

**Procedure:-** Will take 8 beakers and will minimum 2 liters juice in it. We put Zinc and Copper plate in it. We joint those plates with wire and thus bulb glows.

**Uses:-** We can use this procedure where electricity is not available. This machine is very cheap and easy to use.

#### **Evaluation of the details**

From 1 beaker	0.5 Amp
From 8 beaker	4 Amp
Total juice	2 L
Two bulb	20.20 watt

## **Hybrid Cars**

*Mrudang Rajesh Patel*  
*Father Agnelo English School, Silvassa, Dadra & Nagar Haveli – 396230*

### **Abstract**

Hybrid cars showing the electrolysis process deeply and utilization of Hydrogen Gas as a fuel to pump the modern vehicles. The model depicting the swift developing technology and the level of human capability of discovering and conceptualizing those sources of fuel what man might have thought only in dreams some years ago

We are now much more eco-friendly than we were as after hydro-tech being introduced, we are all set to throw away pollution by car exhaust (in form of carbon monoxide release by not using petrol and diesel. Our success in ability to use hydrogen as fuel has proved to be a boon, as with no back up except hydrogen, the world would have come to a standstill with the exhaustion of petrol and diesel. Hybrid car can simply be defined to be an ideal car that uses Hydrogen gas to produce electricity and then pump the car.

Therefore, the very simplified process includes extraction of hydrogen from water by the process of electrolysis and then utilizing the hydrogen gas to produce electricity and then utilizing the electricity to pump the vehicle. The process of electrolysis is carried out in a fuel cell which consists of plasma membrane and proton exchanger. The breakdown of water as well as the combination of gases takes place in this fuel cell.

## **Fractal Horizon**

*Manik Vyom Singhal and Megha Arora  
Delhi Public School, Vasant Kung, New Delhi*

### **Abstract**

Chaos theory deals with the unpredictability in various complex functions or one can say it deals with the predictability in the unpredictability. Fractals are visual arrangements of the order present in a chaotic system.

Due to the Japanese tsunami earlier this year and its varying effect over the coastline of Japan, we hypothesised that the fractal nature of coastlines has an effect on the wave heights caused by the tsunami. Calculating fractal dimensions of various parts of the coastlines and comparing it to the wave-heights of the tsunami waves on the respective coastlines, we mathematically concluded that the fractal nature of coastlines affects the wave heights of tsunamis, though on further research we discovered that the fractal nature of coastlines complements the effect caused by the width of the ocean floor.

We also explored the random system of our financial market. Our financial markets are random sequences, but we hypothesised that our financial markets are more chaotic than random. By using the concept of self-similarity we concluded that our markets indeed have a fractal nature. Using this fact we further examined an anomaly in the time sequence, i.e. the recession. We hypothesised that greater the fractal nature of a recession greater is its effect. We were quite surprised by our results when even though our hypothesis was proven to be correct, because the time when the memory of the system was longer the effect of the recession was less. We then included the impact of human sentiment in the market.

## **Mathematical Model**

*Praneeti Solanki, Prerna, Pawan Pandey and Sweta M.  
Andhra Education Society, N.T.R. Memorial Senior Secondary School,  
Janakpuri, New Delhi-110058,*

### **Abstract**

#### **CUBOID, HELIX AND SPIDER'S SPIRAL (SAVE ENVIRONMENT AND INOVATIVE MUSICAL INSTRUEMENTS)**

We have been learning about Cuboids right from the lower classes. Cuboids have six faces, eight vertices and twelve hedges. Diagonal = square root of length square + breadth square, diagonal = square root of h square + d1,  $v = l \times b \times h$ . Open cuboid hedges joining the vertices give us Octagon (eight sided figure). For understanding the diagonal of a cuboids we made new mathematical five musical instruments (using Pythagoras theorem and spiral).

Take many congruent cuboids and join them diagonally, which results the formation of circular structure called helix. A helix is a smooth curve and a space curve characterized by the fact that a tangent line drawn at point makes a constant angle with a fixed line called axis. The pitch of helix is the width of the helix measured parallel to the axis when a complete helix is turned around. Rectangular blocks cut diagonally forms 3D helix. In mathematics helix can be made by an equiangular spiral, a simple curve can be called helix if the ratio of the curvature to torsion is constant. It can be representing in Cartesian co-ordinate, a cylindrical co-ordinate and circular helix. Examples: DNA, double helix it has two strands inter coiled together, alpha helix, conical helix, human umbilical chords, horns of antelopes, ram and narwhal whale and pattern of veins an arteries of our body.

Rectangular block cut diagonally form a 3D helix. Cylindrical and circular helix represents in a Cartesian co-ordinate and its parameterization helps to trim the animal horns or can remove the horns according to their respective cases so that it saves their lives.

Using mathematical calculation we can save the death of such types of animals and save the earth by cultivating helix shaped bamboo plantation. Learn maths through new musical instruments and vice versa.

## **The Art of Mathematics**

*Shikha Singh & Chirag Malani  
Bright Day school, CBSE, Vasna Bhayli Road, Vadodara, Gujarat*

### **Abstract**

**AIM** – To create a mathematical model of rainfall in the Narmada District

The prediction of the rainfall trend in the upcoming years can be done by least square method using the following equations-

$$y = a + bx + cx^2$$

$$\sum y = na + b \sum x + c \sum x^2$$

$$\sum xy = a \sum x + b \sum x^2 + c \sum x^3$$

$$\sum x^2 y = a \sum x^2 + b \sum x^3 + c \sum x^4$$

The method of **least squares** is a standard approach to the approximate solution of over determined systems, i.e., sets of equations in which there are more equations than unknowns. "Least Squares" means that the overall solution minimizes the sum of the squares of the errors made in solving every single equation.

The predictions on rainfall can be further used to calculate the extent to which the water can reach using sophisticated concepts and suitable steps can be taken for proper utilization. Sophisticated methods like Artificial Neural Network etc. can also be used for more accuracy.

This is also useful for Market Analysis, in preparation of Domestic Budget, to find out the rate of change in census, even in predicting the number of patients in disease prone months etc.

On the basis of the predictions we can have proper planning to face the foreseen situations by curtailing the errors.

This system of approximation is more robust in comparison to others as it has least chance of sum of the squared errors.

## **Magnetic Floating Effect**

*Syed Abdul Mohsin  
Govt. MM Boys Hr. Sec. School Pulwama J&K*

### **Abstract**

#### **Principal of Working:-**

- **Neutral point theory:** - The region where the magnetic field is zero in this model neutral point occurs at three points (between three front magnets, middle three magnets and backside magnets)
- **Principal of repulsion:** - It states that when like poles come in front of each other, an opposite force develops.
- **Newton's First Law Of Velocity:** It states that every object in this universe continues its state of rest or uniform motion until and unless some external force is not applied on it.

#### **Working:-**

The forces between lower box magnets and upper pointed cylinder magnets made the pointed cylinder to float over the box. The pointed cylinder is in touch with the disc, which makes it stationary and makes it to float in air.

#### **Procedure:-**

- Take a chess box and make rectangular openings, in which one of them have 3mm X 7 cm size and remaining three have 1 cm X 9 cm size.
- Fix the six magnets and two cylinders on the same poles and hold these magnets tightly by the help of non magnetic substances e.g., thread, plastic etc.
- Fix two magnets in three openings.
- Cut the disc in such a way so that it could get fit in the small sized opening of the box.
- Fix the comparatively small three magnets in the pointed cylinder, so that they can repel to larger ones.
- Fix the disc in the small opening so that the pointed cylinder could rotate on this disc

#### **Uses:-**

- This model has been styled in such a way that it is free of any kind of pollution and expensive fuels. It is very simple and becomes ready without spending much time and money. It is also attractive, light and portable.
- The model can be used in pullies in factories and industries, where the pullies will be responsible for moving the belt of the industry.
- This model can also be used to run trains without using any kind of fuel as that of maglev train, we can make a train like maglev which will not produce any noise, no ground friction which will save a lot of energy and fuel, but this model can produce energy as well.

## **Jungle Saver**

*Abhishek Sharma, Harish Salotra, Vikrant Jandiyal & Maheshwar Dass  
Govt Boys HR.Sec.School, Jammu & Kashmir.*

### **Abstract**

Burning of Forest is a great loss of Environment and money. Our 60% population still depends on firewood for cooking. This adds pollution and forest department. Village Forest Committees, Forest Task Force, N.G.O's, yet all these agencies are not able to achieve their goal. The main reason of forest fire is that most of our forests in Jammu Division are covered with pine Trees, which have resin- a highly combustible substance. It burns rapidly when comes in contact with fire and atmospheric oxygen helps to make the burning vigorous.

Since our forests are made up of Pine trees, fire breaks mostly in summer season. Forest fires engulf large area of forests annually. This increases air pollution and health problem.

Solution to the problem lies in simple technique that fallen Pine needles collected in the specially designed chamber and burnt in absence of oxygen (Carbonization). The resultant molten material is then mixed with 10% of co dung to produce smokeless coal.

This indigenously innovative technique will not only generate self employment in rural area but also reduce pollution. It will prevent forest fire to a great extent. There will be no shortage of the raw material as it is easily available. As this technique will help the people to earn live hood so it will stop migration of labor from mountainous area to plain area. This technique is of nominal cost & will expand forest cover which is reducing day by day.

## **Recovery of Copper from E waste**

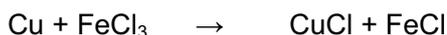
*Utkarsh N. Joshi*

*Rashtriya Shikshan Sanstha Swami Vivekanand Vidyamandir,  
Vishnunagar Dombivali (w) 421202, Thane Maharashtra*

### **Abstract**

The project aimed to recover waste copper in etching process of PCB, to aware the society about reuse of metal, to keep community hygiene well and to maintain environmental balance by reducing water and land pollution

The Scientific Principle in valves in the project is the electrolysis of  $\text{FeCl}_2$   $\text{CuCl}_2$  of an electrolyte by passage of electric current. The aqueous ferric chloride ( $\text{FeCl}_3$ ) react with copper and gives  $\text{CuCl}_2$  &  $\text{FeCl}_2$



The oxidation potential of iron is greater than copper, so  $\text{Fe}^{+2}$  oxidise at anode and  $\text{Cu}^{+2}$  reduce at cathode. While making PCB (printed circuit board), etching process need to be done. In this process, Ferric chloride ( $\text{FeCl}_3$ ) is used as etching. After etching we get mixture of  $\text{FeCl}_2$  which is wasted and to be thrown up. Land and water get polluted because of this solution. Our project is useful to overcome this problem. We try to recover copper by electrolysis of this waste solution ( $\text{CuCl}_2 + \text{FeCl}_2$ ). In this process the solution of  $\text{FeCl}_2 + \text{CuCl}_2$  acts as electrolyte. Iron rod as cathode. During electrolysis metallic copper is deposited at iron cathode.

## **Production of Bio-Diesel from Pongamia Pinnata**

*Sayali Sanjay Pawar*

*Shripatrao Patil High School & Junior College, Satara, Maharashtra*

### **Introduction**

The demand for alternative fuels is growing and green fuels can help meet this need. With the rise of oil per barrel nowadays renewable fuels can help offset fuel costs and aid the environment by reducing carbon emission and other harmful gases. Energy is the key in the development for any country as there are limited resources of fossil fuels. There is a need for transition towards alternative fuels like biodiesel. This project is a larger effort to promote energy literacy and education.

### **The scientific principle involved.**

Biodiesel is made by chemically altering organic oil through the use of a catalyst and an alcohol. The chemical reaction that occurs through this process breaks down the oil molecules and replaces the glycerin portion of the molecule with an alcohol molecule. The glycerin falls to the bottom and is drained off resulting in biodiesel chemically called ester. The process is called transesterification.

### **Description:**

#### **Materials used for the construction.**

- Glass flask 750 ml. 2 nos.
- HDPE container of 4 liters capacity, 1. nos.
- Electric motor of 150 rpm with speed controller.
- Heating coil of 1000 watt with temperature regulator (thermostat)
- Measuring flasks, glass rod, funnel, storage flasks etc.
- Vegetable oil (Pongamia pinnata) 3 litres.
- Sodium hydroxide 6 grams.
- Methyl alcohol 750 ml.
- Water 5 litres
- Air pump (used for bicycle)
- Washing and storage HDPE containers

### **Construction and working:**

An apparatus for chemical process is built using above stated instruments. A 4 litre HDPE vessel is taken. 1000 watt electric heating coil is attached at the bottom inside the vessel .It is in a suspended position, without touching the sides of the container with temperature regulator (thermostat). Electric motor with extended rod and a propeller is attached to the lid of the container .A glass funnel is attached to one side of the lid. A drain valve is attached to drain out the mixture. Thus an automatic transesterificator is built.

### **Process:**

3 liter pure vegetable oil is poured in the transesterificator .a mixture of sodium hydroxide 6 grams and methyl alcohol 750 ml. is poured in the flask. This mixture of sodium methoxide is poured slowly in the container. The propeller mixes the contents. As the chemical process starts the coil heats the mixture at 55°C constantly. This process is to be carried out for 1 hour and 30 minutes. The solution is drained into a vessel and allowed to settle for 24 hours which separates bio diesel (on top) from glycerin. Bio diesel is then bubble washed in water and then boiled thus ready- to- use pure biodiesel is obtained.

### **Applications:**

- a) Biodiesel: it is used in
- Diesel vehicles
  - Agricultural water pumps
  - Industries
  - Electricity generators
- b) Glycerin: it is used in,
- Cosmetics
  - Medicinal purposes
  - Making soaps

## **Low Cost Multipurpose Seed Sowing Cum Fertilizing Machine**

*Thongam Raghunath Singh  
Churachand Higher Secondary School Imphal East  
Manipur*

### **Abstract**

Agriculture is an important primary occupation of human beings. It includes cultivation of crops. India is essentially an agriculture country. The importance of Agriculture in Indian economy can be judged from the fact that it sustains nearly one-sixth of the world population despite the fact that it has only 2.4% of the world's total land area. Moreover, nearly two-thirds of the country's total labour is actively engaged in agriculture. New scientific methods for cultivation of crops, as well as saving time, money and energy by using new requirements or mechanics for sowing and fertilizing, are called Multipurpose low cost seeds sowing cum fertilizing machines.

When the rotated wheel blade pushes and pulls forwards and backwards, it produces a desirable furrow in the soil with fertilizer. In this process, fertilizer falls from the fertilizer container. During this time, seeds also fall from the seeds container and are placed into the ground with the help of a seed-falling guard. Then, the leveler covers the soil for germination. The farmer also related and makes rows for seeds falling on the ground.

There is a wheel blade which is tied forward from the handle. Also, the seeds container and fertilizer container are placed back and front of the handle. A rubber belt is connected between the rower seeds container and between the seeds container with the fertilizer container. Moreover, a leveler is also placed in a backward position.

This could be an innovative machine to solve the time & labour engagement issues in seeding and fertilizing. These multipurpose machines have come into existence since cultivation mostly faced the problem of sowing and fertilizing. Since this machine is an innovative machine, it is developed in order to save time, money and labour used for sowing and fertilizing.

## **Page Lifter**

*Suneli Mahanta*  
*Swapneswar New Govt. High School, Mayurbhanj, Odisha*

### **Abstract**

Soil is living skin of Mother Earth. Land available in our locality is under pressure due to change in land-use pattern. Topsoil needs millions of years to form, whereas due to anthropogenic activity, we are losing the topsoil rapidly resulting in loss of soil biodiversity. Soil contains millions of microbes which help maintain fertility of soil as well as ecosystem through biogeochemical-cycling. We tried to find out difference between microbial flora in agricultural land and construction sites' land. For buildings, a lot of bricks are required which are manufactured using fertile topsoil.

### **OBJECTIVES:**

- 1) Trace reasons behind increasing pressure on agricultural land.
- 2) Observe changing patterns of microorganisms present in soil due to anthropogenic activity.
- 3) Estimate future impacts
- 4) Create awareness to preserve land-resources for posterity
- 5) Find solutions to decrease pressure on agriculture

### **METHODOLOGY:**

- 1) Area was surveyed to know status of crop fields and different types of pressure occurring on agriculture.
- 2) Interview format was prepared to assess responses of Baliana's fifty residents.
- 3) Microbiological study of different microbes and their population in soil samples of agricultural fields and construction sites was done.

### **FINDINGS:**

#### **A. Reasons behind pressure on agricultural land:**

- Decrease in agricultural land area.
- Inability of farmers to produce and earn money from non-land based units.

**B. Microbiological observations:**

- Microbial diversity of agricultural soil is higher in number than construction sites' soil.

**C. Estimating future impacts:**

- Decrease in agricultural land, food grains production and microbial-biodiversity of soil.
- Change in agro-climatic condition.

**D. Create awareness for efficient farming:**

- Sensitizing awareness programs.
- Organizing community-awareness week and door-to-door campaigns.

**E. Solutions to decrease pressure on agricultural land:**

- Construct high-raised buildings.
- Non-land based enterprises.
- Different cropping systems.
- Integrated farming system.

**CONCLUSION:**

We should conserve microbial biodiversity of soil for our posterity and encourage high-raised buildings in small patches of land in order to reduce pressure on agricultural land.

## **Modern Aquatic Biodiversity**

*Saubhagya Ranjan Samantaray  
Brahmagiri High School, Odisha*

### **Abstract**

#### **Introduction**

For all living organisms, air is one of the most essential substances. By making proper balance in aquatic environment, there is a possibility to better chances of survival of aquatic animals.

#### **Objectives**

The objectives of this project are: to protect the natural pond bio-diversity; to recycle the harmful waste products and convert them into good manure for providing fresh water for aquatic animals; to make a better living medium for fish and prawn; to increase soil fertility; to prevent extinction of aquatic animal; to increase the production of fish; to fulfill the need of drinking water; to reduce the manpower in fish cultivation; to use new devices for easy fishing and cleaning of non-diffusible substance and to make artificial rain for molting of prawn.

#### **Purpose of Project**

This project aims at: to reduce nitrogenous waste product (Ammonia); to maintain the pH of water; to recycle waste product into useful product for aquatic animal; to clean polluted water; to increase the soil fertility; to remove non-diffusible substance through new device; and to catch fish easily through a new device. The pond must be square in shape. Four poles are placed on four corners. These poles may be wooden or of concrete. In pond two types of net are used. First net is used for collecting floating weeds and second net is used for catching fish.

#### **Conclusion**

We may include from this project that high ammonia and oxygen deficit create great hazard for aquatic medium. This method can be used to increase the production of aquatic animals such as fish and prawn which fulfill our proteineous food requirement. We can recycle the waste products for reuse. This process is indeed environment-friendly.

## **Mechanical Study Table for Handicaps**

*Gurwinder Singh*  
*Govt. Sen. Sec. School Kalyan Dist: Patala, Panjab*

### **Abstract**

There are thousands of people in the world, who are handicapped from their hands, arms, or even both from arms and legs due to some accident or due to certain disease or by birth. Unfortunately they cannot continue their study because they are unable to turn over the pages of book. Our working model of “Mechanical study table for handicaps” is a miracle for persons that help them to turn over the pages of book and can continue their study and can communicate to the world.

With the help of this table a handicapped person can turn over the pages of book with his/her feet, if his arms have lost the ability of working but legs are in working condition.

If both arms and legs have lost the ability of working then he/she can turn over the pages with the help of his/her shoulders in this model an electromagnet is used to pick up the pages of book with the help of iron clips punched on each page of book.

To turn over the page firstly the clip attached to particular page is brought under electromagnet using sliding surface on which the book is placed with the help of a belt passing over the pulleys. When handicapped person switch on the electromagnet with his/her body part then magnet pick u the page by attracting iron punching on page. Then wheel provided on the table which carry the electromagnet can be rotated with the help of paddles if legs and feet are in working condition but arms are not in working condition and page is turned over then electromagnet is switched off and page is released. Same is performed with shoulders if both arms and leg are not in working condition.

## **Solar AC Solar Chimney**

*Ravneet Kaur*

*Govt. Senior Secondary School, Mohinder Ganj, Rajpura, Panjab*

### **Abstract**

#### **Solar AC**

Construction: - Artificial house, Chimney, Box pipes and bottles.

Working: - A hole is dug near house which is 1m-2m deep Brick stones are placed in it with sufficient water to be absorbed by bricks. An underground pipe is connected to the house to be cooled. When the sunlight fall on the hole evaporation will take place and cooling effect will be produced. Chimney on the top of house is little bit modified i.e painted black and some area covered by glass to increase the temperature of chimney by green house effect, According to the principle of air hot air will rise up towards the chimney and will be removed out. In order to replace the section created in house, cool air from the hole through pipe will come towards the house and cool it and the cycle continues.

#### **Solar Chimney**

Construction: Metallic Chimney, 12 X 2 Black and white sheets, tribunes, dynamo and galvanometer

Working: White sheet attached with chimney is taken as collector area for trapping sunlight. Black sheet is used as an absorber of heat. Sunlight will fall on white sheet producing green house effect and causing rise in temp below it . Visible rays when fall on it will be changed into I.R rays hence resulting in production of heat. Air becoming hot under collector area will rise up towards chimney according to its principle. It will not come back as atmospheric air is applying pressure on it. So with great pressure and velocity air will rise towards the chimney and will be removed. Air while turning into wind in chimney and rising above ill obviously rotate the turbines placed in its path and hence from there it have shown the production of electricity by connecting galvanometer which converts heat energy to electrical energy.

## **Biodegradation of Horns – an Eco-Friendly Manure**

*Shikhar Gupta & Priyansh Saxena  
B.B.L. Public School, Bareilly, Uttar Pradesh*

### **Abstract**

#### **Introduction**

Animal horns are made of compressed hair & are considered as environmental hazard, because they are made of Keratin & have disulphide bonds, making it very strong.

#### **Principle**

Soil has fungal varieties capable of degrading horn proteins. Eg. – *Microsporum gypseum*, *Chrysosporium indicum*. Cow dung is another source of fungi.

#### **Procedure**

Collection of horns, mainly from villages, Preparation of pits for burying horns, Underlying of pits with vermin-compost to support growth of fungi., Filling of horns with cow dung to provide optimum pH for fungal enzymes., Burying horns – broad end downwards, pointed end upwards - & covering with vermin-compost, Preferred period for burying – November to February, Intermittent inspection regularly, Digging out degraded horn & compost cow dung, Biochemical & microbial analysis and Applying horn bio-manure.

#### **Soil Enrichment**

COMPONENTS – 30% Nitrogen, 20% Phosphorus, 12% Potassium and other useful nutrients. All components are 2 times more in proportion than other composts.

### **Other Benefits**

Highly cost-effective, Lasting effects, Easy to make & use and Environmental friendly

### **Vermi Bio-Manure**

- ❖ Worms – Jaigopal
- ❖ Feed – Jalkumbhi OR 10% cow dung + 90% farm waste.
- ❖ Conditions – air, moisture, temperature 20-25 degree Celsius.
- ❖ Size of pits – 30 cm high, 90 cm wide and length no bar.
- ❖ Benefits – eco-friendly, cost effective, multi-purpose, easy to make, reduces CH<sub>4</sub> & CO<sub>2</sub> content in atmosphere.

### **Nutri-Wash & Vermiwash**

- ❖ Made from earth-worms.
- ❖ Certain temperature is required, at which earth-worms secrete fluid.
- ❖ BENEFITS – removes pests as a bio-pesticide, contains all nutrients required by the plants, helps in the breaking of dormancy, helps in speeding the growth of the plants, eco-friendly, cost-effective & easy to prepare.

## **Effect of Smoking on Atmosphere: A Mathematical Model**

*Nayana Maheshwari  
Government Maharana Higher Secondary School  
Rajasthan*

### **Abstract**

#### **Preface:-**

Presently, the people smoke freely in all the places which another people are also affected. From the report of the Survey, every year in India 57 lakhs people are dies because of smoking and also 6 lakhs innocent people died because of smoking in this World. Instead of human, creature, vegetable & environment are also affected by smoking.

#### **Vedic logic behind the Exhibit:-**

1. Study & mathematical modeling of the effect of the smoke in environment.
2. Finding the relation between Global Warming, Green House Effect, pollution of environment & forest due to smoke.
3. Alert the people to the danger of the smoke & awaken towards the environment.

#### **Material Required in Manufacturing:-**

Ply wood, metal roller, Chart, Fevicol, Piece of cardboard, Colour, Bidi, Cigarette, Ashtray, Monthly, Physical balance.

#### **Incorporate Scientific Theory:-**

1. Normal Theorem of Mathematics
2. Statistics Theorem
3. Mathematical Modeling
4. Mass-energy Theorem

The following result was obtained from the smoking of 612 people at public places.

**Table-1**

The classification of the detail of Bidi, Cigarette, Hukka & quantity of water etc. is used by 369 people from 612 people.

**Table-2**

Classification and number of people using different smoking products:

**Table-3**

Ratio of death rate of age group from 30-69 due to smoking & without smoking in India.

**Calculation-1**

Smoke from Bidi produced by 612 people in 1 year ----- 490453.785 gm.

**Calculation-2**

Smoke produced by 612 people in 1 year from cigarette ----- 167.78685 kg

**Calculation-3**

- Conversion of Bidi to Smoke = 52.38%
- Conversion of Cigarette to Smoke = 61.70%
- Conversion Hukka to smoke = 65%

**Uses:-**

This project is useful for the students as well as for the people. They will help in protecting the environment rare species, flora & fauna. They will be responsible person of the Society.

**Conclusion:-**

By creating smoking free environment & protecting our tree we can protect our environment from the effect of Global Warming, Green House Effect as well as we can protect our rare species, sea creature.

## **Integrated Agricultural Techniques**

*Shivam Pandey*

*Kendriya Vidyalaya, Gonda, Uttar Pradesh*

### **Introduction:-**

This project comprises of food grains. It consists of Ultrasonic pest repellants to keep away insects and pests from stored food grains, Moisture Detector and Fire Alarm.

Moisture detector raises alarm when moisture content in stored food grains increases beyond a certain limit. These electronic devices are useful in safe storage of food grains in go downs. About 40% of stored food grains is destroyed every year by insects, pests and decayed by moisture.

### **Scientific Principle Involved:-**

Micro-tech irrigation pump works on the principle of normal water pump in which pressure gradient is generated by the suction pump with rotating fan. For rotation of fan, muscular power of animals such as bulls, camels etc. can be used. By means of an assembly of a number of gears of different sizes & pulleys, number of revolutions per minute (rpm) of fan is increased many folds. Due to which fan rotates with high speed and develops sufficient pressure gradient to draw out water from deep underground borings.

Ultrasonic pest repellant produces ultrasound of high frequencies more than 20000Hz which we cannot hear but it makes insects and pests restless and they leave the place where this sound is produced.

Moisture detector conducts and completes the circuit in presence of moisture and raises alarm indicating increase in moisture level in good grains.

Fire alarm consists of heat sensitive diode which completes the electric circuit when there is rise in temperature due to fire. When circuit completes, the connected alarm starts giving signal.

## **Population Pressure on Land Quality**

*Saritha .A, Suman .S, Nisha John, Danish Mustafa and Ramya  
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### **Abstract**

The significance of studying human population is to create awareness about:

- The consequence of uncontrolled population is to growth;
- The advantage of small family norms;
- The growth, distribution and density of population;
- The relationship between population and standard of living;
- Methods of control of human population growth;

The twentieth century has been a century of unprecedented population growth, economic development and environmental change. Decreases in famine related deaths and infant mortality rates are partially responsible for this rapid population growth.

Human population is primarily influenced by availability of natural resources as well as climate and land feature. In the modern age, however the work facilities and economic condition have become major influential force behind development of human habitation.

Population and environment are closely related in a complex and dynamic manner and this relationship is mediated by number of socioeconomic, cultural, political and developmental aspects whose role varies considerably from one context to other. The massive population base of which ample number are living below poverty line, non-sustainable agricultural and industrial practices and relatively small scope for further expansion of agricultural land, mark it all the more important to understand the relationship between population pressure, change in land use and environmental degradation.

Our main motive is to make an attempt to study the trend in population growth, socio economic development and changes in land use highlighting the extent to which land under forest have declined over time and across various parts our island.

On the basis of our work plan we selected two densely populated areas of our city- Japan Road (Dairy farm, Port Blair) and Haddo (Port Blair). Questions were

asked to the common people residing in the area based on the parameters of living area.

On the basis of our survey, we came up with the following result and conclusion:

- Very congested area so that ration of the persons living in that area is 1:8 i.e. one person just shares 8 Sq. m. of an area.
- No proper/irregular water supply
- Water provided by the municipality to the area of Haddo is often dirty and harmful for drinking purpose.
- Lack of sanitary facilities.
- Open drainage that make live hood stingy
- Children living in that area are often affected by diseases like Cholera, Viral Fever, Dengue, Chickenguniya, Malaria etc. as a result of the open drainage and the overflow of dirty water from it.
- No proper disposal/management of waste accumulated as they are found to be scattered in an around the roads.
- Narrow roads due to which vehicles cannot be parked in a systematic way resulting in death of animals coming under the vehicles.
- Kutcha road that causes a great problem during rainy season.

As every problem has its own solution so as overpopulation has. Overpopulation is an issue that threatens the state of the environment in several ways. So the need of the hour is it makes a change in order to reverse some of the environmental effects brought on by current social norms.

Education and empowerment plays a lead role in controlling the population pressure. So by educating the people or rather by creating awareness among them about their contribution towards the nation, we can to a great extent control the population growth.

As over population is related to the issue of birth control, so there must be strict measures to reduce birth rate; as few government policies must be undertaken by the countrymen to reduce population growth like- Family planning, birth control methods (Vasectomy, tubectomy), devices like condoms and pills can be used and also IUCD's must be easily available so that birth control measures can be taken in an affordable manner.

As reproduction is an inseparable part of our life so, we have to control it, to ensure a better future for our upcoming generation.

## **Land Degradation by Quarrying Operation.**

*Baha Stuti Bhat, Neha, J. Venketesh, Sonia Singh and Sruti Jha  
Class-IX, Government. Model Sr. Sec. School, Port Blair,  
Andaman and Nicobar Islands*

### **Abstract**

Andaman and Nicobar Islands cover about 8249 sq.km area of land. According to the statistics of 2011, the land has been degraded by 24.5%. Indiscriminate quarry operations are on at full swing in the South Andaman where a 3 sq.km stretch houses as many as 35 quarries. With a lot of rebuilding and reconstruction work happening Post-Tsunami, building coming up, the demand for stone and stone product like granules and dust has increased in the Andaman and Nicobar Islands. Since there are no quarries in Nicobar, Villages like Brookshabad, Prothrapore and Brijgunj located on the outskirts of Capital Port Blair have become the centre of the islands quarry activities.

The quarry operations are being carried out since several years, Now days quarry Industries has become a major industry in these islands. The Andaman & Nicobar Administration is giving licenses to private parties to extract stone. For this purpose a vast area of top soil is being removed along with the vegetation cover in that given quarry site. As a result, land is degrading at a faster rate. Since this piece is a research work and first of such type initiated to determine the impact of quarry operations on land-thus a case study of Corbyn's Cove quarry site in Andaman & Nicobar Islands.

## **Bio- Input Good Substitute For Fym**

*P. Supriya, K. Nagapurnima, Sk. Sameena, K. Nagendra Kumar  
and K. Raghuram*

*Government High School, KOVUR S.P.S.R. Nellore Dist, Andhra Pradesh*

### **Abstract**

#### **Introduction**

Soil quality is defined as the continued capacity of soil to function as a vital living system, within ecosystem and land-use boundaries, to sustain biological productivity, promote the quality of air and water environments and maintain plant, animal and human health. In short, soil quality can be defined as the "fitness for use" or "capacity of the soil to function". There is several interacting process occurring among the components of soil as well as with atmosphere. Soil is the storehouse of major, secondary and micronutrients required for plant growth and also for the growth of soil micro-flora and fauna. Through different chemical, biochemical and microbial processes, these nutrient elements are released slowly as per the requirement of plant and other organisms. Plant is incapable to take up nitrogen directly from atmosphere even though it contains about 77% nitrogen. Some of the bacteria living in soil fix atmospheric nitrogen to make it available for higher plants. Similarly, soil contains significant amount of phosphorus, but in unavailable form. Various chemical and biochemical processes (mediated by phosphorus Solubilizing Bacteria) make this nutrient available to plant. Thus status of various nutrient cycling processes indicate the health status of soil. Pulses constitute a group of the legume family which, with the help of Rhizobium, symbiotic bacteria in their root nodules, fix atmospheric nitrogen and improve soil fertility. These crops are generally included in rotation in most of the areas in the country and have helped to keep the soil alive and productive. They also cultivated as pure crops, mixture crops, inter crops, bun crops and border crops. They are also excellent forage and cattle feed.

In spite of the key role played by these pulses in dietary and soil life, the area and production remains the same. The Productivity fluctuates at low profile, compared to other countries. Due to poor organic fertilizers in the soil enrichment of soil with organic matter is an uphill task for the farmers due to non availability of organic fertilizers especially Farm Yard Manures (FYM). So we selected a project on "**BIO-INPUT GOOD SUBSTITUTE FOR FYM**".

#### **Objectives:**

1. To observe the percentage of seed germination in Farm Yard Manures (FYM) and in the combination of Bio fertilizers and NPKS.

2. To observe the average length of the shoot in Farm Yard Manures(FYM) and in the combination of Bio fertilizers and NPKS.
3. To explain the results of the experiment to the farmers.
4. To survey on organic farming and no Bio fertilizers.
5. To create awareness among the farmers about the importance of Bio fertilizers.

### **Methodology**

To study the importance of Bio fertilizers we conducted a simple experiment with different mixtures of organic, inorganic and Bio fertilizers. We have taken three polythene bags and filled with different combinations of organic, inorganic and Bio fertilizers.

Sl.No of the Bag	Soil quantity	FYM(Cow Dung)	Chemical Fertilizer	Bio-fertilizers	No of seeds sown
01	2kgs	---	---	---	25
02	1kg	---	---	---	25
03	2kgs			Rhizobium & PSB Cultures applied to seeds	25

We conducted the experiment with Cow-Pea, Bengal Gram and Black Gram. We surveyed 40 farmers in kovur mandal, S.P.S.R. Nellore District about organic farming and on Bio fertilizers.

### **Results**

We observed average percentage of seed germination. Percentage of seed germination is more in Bio-fertilizers+ NPKS than in Farm Yard Manure. We observed the average length of the shoot on 10<sup>th</sup> day, 20<sup>th</sup>, 30<sup>th</sup> day and 40<sup>th</sup> day. Average length of shoot is more in Bio fertilizers+ NPKS than in Farm Yard Manure. We have surveyed 40 farmers about organic farming and on Bio fertilizers. Most of the farmers do not know that government is supplying Rhizobium & PSB cultures in subsidiary rates to the farmers. But 51% of farmers said that Bio fertilizers give good yield. We create awareness among the farmers on importance of Bio fertilizers.

### **Conclusion**

The application of Rhizobium fixes atmospheric nitrogen and Phospho Bacterium (PSB) Releases the unavailable form of phosphorus to available from thereby, the plant absorbs the above nutrients easily from the soil. Therefore it is advocated to farmers that in the event of non availability of FYM, Rhizobium and PSB can be applied along with the recommended dose of NPKS under rain-fed situation.

## **Alternate Ideas to Sustain Land Resources of Bana Circle**

*Micheal Kino, Jorjee Sonam and Bommuk Don  
Ekalavya Model Residential School, Bana East Kameng  
District, Arunachal Pradesh*

### **Abstract**

We have selected the New Sopang village as reference for studying the effects population pressure on the land resource, bio-diversity and environment as part of our project of the 19<sup>th</sup> National Children's Science Congress. Due to population explosion the problems on poverty, food, shelter etc. are rising. Not only these, the part and partials of our lives, our mother nature is also under great threat. As now the present world has witnessed the glaciers melting, air polluting and many more. Due to increase in population people are destroying the bio-diversity for fulfilling their needs. This resulted in the annual extinction of 27, 00 species and some other species get extinct even without identification. Not only these, the "Land" –a precious natural resources and many other are suffering from human induced pressure, pollution nowadays and with more population, the power of toleration of our nature will break and unseen consequences will occur. To stop this, the places with rich biological resources like our state Arunachal Pradesh in general and our surrounding areas, habitats must be protected in particular and the available natural resources must sustainably be utilized. We have tried our best to accomplish our project with suggestion, discussions, data, and methodologies, interviews cum surveys, data analysis and solution to overcome these particular problems in the scientific perspective.

## **Community Knowledge on Soil Conservation in Tirap-A Study on Nocte and Wancho Farmers**

*Ngoaliam Wangno, Leamkai Wangpan, Wangnoap Matey,  
Longhua Wangpan and Ngamtu Atoa  
Christ King School, Khonsa Tirap District, Arunachal Pradesh*

### **Abstract**

Arunachal Pradesh is well known for its abundant green vegetation due to which it receives good monsoon rain. But due to the population explosion, in the last decades, its forest resources are disturbed too much and lead to decline in many species of flora and fauna that ever existed in it. In this ancient land, community knowledge and practices in connection to various human activities such as healthcare, textile and agriculture etc. have been going on since time immemorial. But at the same time, due to ignorance some harmful practices are also going on simultaneously. Now a day due to many reasons the fertility of land for agricultures depleting. Since, most of the people practices shifting cultivation due to lack of enough plain and fertility of the soil. The present work is based on various references, guidelines and curriculum frame work of NCSC. This project is fully based on detail field study, survey done in Chasa village located in the Khonsa Block of Tirap district. With this project work, we came to discover many shortcomings in soil conservation and management. Our project is mainly focused on different sorts of land management, especially in cultivated lands. From this , we could infer that these sorts of soil management have certain shortcomings like low yielding, degradation and as well as to conserve soil by controlling large scale deforestation, planting more trees, and finding new ways of cropping to prevent soil erosion. Thus, through this project, an attempt has been made to study the traditional practices being practiced by our tribal community and the problems being faced by them and to find out their solutions.

## **Termite Soil – Its Quality And Effect On Growth Of Rice**

### **Abstract**

*Devam Kakoty, Devraj Kakoty, Nabaraj Mahanta,  
Abhay Jain and Digvijay R. Singh  
Shiksha The Gurukul, Chotahapjan, Borhapjan, Tinsukia, Assam*

Soil is a natural covering over the Earth's surface which is composed of loose unconsolidated materials, such as organic matters, tiny particles, and decayed organisms. Organic matters plays vital role in the field of agriculture. It is very much useful in increasing the nutrients of soil. Such matters retain higher amount of water and in turn supply it to the plants on which they grow.

The project aims at to find out the quality of Termite soil, and whether it can be used as an alternative of chemical fertilizers for the proper growth of rice crop. With this objective, this project does an experiment with three different types of soil i.e., Garden soil, Termite soil and Termite soil with cow-dung. Samples of Termite soils were collected from the Talup Tea Estates and the Garden soil are collected from the local gardens. And the third type of soil samples was prepared at the rate of 60:40 ratios, i.e.-Termite soil-60% and Cowdung-40%. Tests were conducted among the soil samples collected including pH test, soil test, phosphorous content, potassium content, and water holding capacity. The experiments tried to establish the positive relationship between the termite soil and its suitability for the growth of rice crop.

From the observations it can be concluded that the Termite soils are very much suitable for the cultivation of Rice crop. Termite soils with the cow-dung make it more fertile and help the crops to grow more. It has highest pH value among the three soil samples which can hold more water, has more humus content and is moist. It is observed that the soil with more humus is better because it can hold more moisture and has more organic nutrients resulting to better growth of rice crop in an eco – friendly procedure.

## **Study of the Bank Erosion of Namdang River and Designing its Preventive Measures**

***Kandarpa Neog, Uddipta Gogoi & Mukunda Madhab Gogoi***  
*Nazira Higher Secondary and M.P. School, Nazira, Sivasagar, Assam*

Soil – the most essential and inseparable natural resource over the earth's surface. It provides habitat for a variety of flora and fauna including human beings. But, now soil has become a threat to the mankind because of Soil Erosion. The topic of this project is the "Study of Bank Erosion of the Namdang River and Designing Its Preventive Measures". River Namdang is taken as a sample river for its study on finding out the preventive measures to check soil erosions over the river bank areas.

The project established the relationship of the deep rooted trees with the prevention of soil erosion. It also recognizes those particular types and names of the trees. Such trees prevent soil erosion by forming a net underground which helps to hold the soil over the banks. Moreover, there are some Fibrous rooted plants which help to check the surface soil by forming a net over the top soil.

The methodologies used in the paper are based on local questionnaire survey and on-field observation of the selected portion of river Namdang (1.5 k.m.s). In fact, a model is also prepared on an Embankment to check soil erosion. This model is completely based on Agronomic Method instead of Techno – based. Therefore, it is very much Eco – friendly, Economic, Easy to apply and prevent Global Warming.

## **To Study the Role of Wild Leguminous Plants (Metilotus & others) in Nitorogen Fixation**

*Shekhar Suman, Shruti Suman, , Kalki Kaladarshi, Srijon Pal & Neha  
Rastogi Kilkari, Bihar Bal Bhawan, Patna, Bihar*

### **Abstract**

India has agricultural land and in a country like India, the importance of soil is unquestionable. As we know that leguminous plants help in nitrogen fixation. But apart from these plants, there are some plants which too help in nitrogen fixation; they have been classified under the category of wild leguminous plants. These are Cassiadora, Cassiaoxidentails, Milelotus etc.

Under this project we have tried to give these wild plants as an alternative for nitrogen fixation. We have selected this as our project because this could be the best use of any group of wild plants. Also, many of these plants have some medicinal properties.

We planted the above identified wild plants in different soils and allowed it to grow naturally. We carefully observed the plants growth and properties. The result, we got, was completely surprising. Nitrogen content in the soil increased a lot after plantation of these wild varieties.

We did a local area survey related to these wild plants and found that people were completely unaware about these plants and their importance. Also many lands were infertile due to nitrogen deficiency. We advised farmers to grow these wild plants in off season or when land is barren.

Out future planning is to spread awareness regarding these wild plants so that maximum benefit could be taken.

## **Preparation of Health Card of School Campus Land**

Ruhi Raj, Arhana Praveen, Nisha Singh, Navin Kumar & Ganesh  
*Vidya Bhawan, Balika Vidyapeeth, Lakhisarai, Bihar*

### **Abstract**

In this project samples were taken from the agricultural land of the mango orchard and our schools play ground. The types of soil were divided into 3 categories and named as A, B and C.

First of all in our school laboratory we tested the physical qualities such as water holding capacity, air resistance, filtering out gravel and stone, bubbling test for the presence of microbes in soil. Regarding these experiments we didn't use or need some special instrument or chemicals. These tests which we have done in our chemistry lab have also been shown in front of local farmers so that they could also understand it easily. In the first stage of these tests we have come to conclusion that soil 'C' has maximum water holding capacity (70%), minimum air resistance and equal presence of microbes this soil is qualitative and fertile soil 'B' water resistance and equal presence of microbes. In the soil 'B' water holding capacity is 60% air presence and microbes are minimum level. In the soil 'A' nutrients are of very low level or minimum. After physical test we have concentrated our mind towards chemical tests.

Soil testing is very important to make agricultural commercial. When we came to know about this from our guide teachers Dr. Kumar Prabhakar and Ganesh Kumar we planned to start our experimental study/Project on our school land or farm our school has 108 acres of a large piece of land. The soil of this area has never been tested before. As per our result Vidyapeeth managing committee and local farmers now know the nature of soil in their area.

## **Restoration of Degraded Land: Earthworms as Bio-engineers**

*Anantha Vishnu, Sargun Kaur, , Ishpreet Singh,  
Amanpreet Kaur and Priyanka  
Govt. Model Sr. Sec. School, Sector 46 D, Chandigarh*

### **Abstract**

Land the marvelous product of nature, without which no life would survive is now at stake worldwide. Man's progress towards development has damaged our land resources, especially the soil.

Our project highlights the restoration of degraded land and abatement of desertification and management of organic waste with the help of Earthworms. The results obtained through surveys, interaction, soil tastings reveal that the soil of the surveyed areas lacked the essential nutrients. A comparative closely related area (field where chemical fertilizers were used and a damp area under the mango tree with no fertilizers) reveals more nutrient contents under the mango tree. Many earthworms were found in this soil where as no earthworms could be found in cultivated area. Standard deviation of earthworms found is 38.44 and Nitrogen is 83.66 correlations of Earthworms and organic matter in soil is .892 at .01 levels (2 tailed).

The group also studied the importance of earthworms in organic solid waste management in which leaf litter can be converted into carbon rich manure. Awareness campaigns were organised to spread the message for and wide to save the most precious natural resource i.e. 'SOIL' by promoting endemic species of earthworms as those are no earthworms superior to those found in one's own soil.

## **Effects of Pavers on Trees Community Knowledge on Land use**

*Arham Bansal, Sayansh Jindal and Divyanshu Bhasin  
St. John's High School, Sector 26, Chandigarh*

### **Abstract**

This study was conducted the effect of pavers on trees on roadsides in Chandigarh. The present topic is a case of Urban Trees Management. Chandigarh is a well planned city marked with wide roads of different kinds ranging from V1-V7 in all its sectors. To beautify the city different varieties of trees are grown on road sides. Besides beauty, trees give environmental orientation to the city. Under the beautification drive and making the city dust free, kutcha spaces are being made pucca by constructing pavers on roadsides, cementing the paths for pedestrians in parks, metalling the spaces in front of market area which later turned into unauthorized parking lots. The drive seemed to be city friendly but it has been found and observed that while constructing pavers and cementing and metalling kutcha spaces the growth and general health of trees are getting affected. The investigating team for the present study decided to take up the issue and sensitize the people and administration regarding the bad effects of pavers and cementing and metalling drive in Chandigarh. Team based their study on physical observation of various sectors 7-11 of Chandigarh, interviews of residents of the said sectors and interviews of the government officials and environmentalists. Observation forms and interview forms were also prepared by the team. Analysis of all the observation and interviews highlighted the bad effects of pavers and need to find the alternative to pavers to protect flora and fauna of the city.

## **Soil Conservation, Culture & Use for Prosperity**

*Kumari Anjulata ,Ku. Khileshwari Sahu, Kumari Dugaswari,  
Krati Kumar and Gurav Srawan  
Hr.Sec. School Bharritola, Distt- Uttar Bastar Kanker, Chhattisgarh*

### **Abstract**

Soil is a previous gift of god, without it we cannot imagine the life soil is the center of bio density. Under our feet the soil has built a beautiful world that ecologist refers as "Black Box".

Scientist (Ecologist) says that it takes millions of years to form 1 inch of soil. It is formed by weathering of rock. It is the habitat of plants also. For conservation of human life & next generation, it is necessary to conserve the soil. Due to the soil life exists on the earth. The use of land is a indication which indicates our society & environment are changing according to our necessities. It is necessary to conserve the quality of natural resource. There are 16 elements which are necessary for food conservation/ present like: - N<sub>2</sub>, Phosphate, Potash, H<sub>2</sub>, C, O<sub>2</sub>, Zn, Fe, Cu, Mg, B, Mn, Ca, S, Mn and K.

As we can't imagine the life without the sun, same as we can imagine not the world without the earth land. We use the land for many purpose be always forget to conserve it. It is the soul of numerous living organism 1 T.S. soils contains micro-organisms which will be equal to human population. By conserved use of soil & water we can improve production of crop soil fertility is decreasing due to depletion of natural resources. So by keeping making the earth healthy we can increase its fertility.

Due to the lack of knowledge 1 hectare land about (26-28 bullock carts) soil erodes into sea, so by adopting different methods we can conserve it. To conserve and prevent the soil erosion in mountain & slopy area, farmers use different methods like counter cropping, percolation tank, ponds, dams etc. National Children Science Congress under sub title:- Use of the land & community knowledge is the team of gon. Hr. sec. School Bharritola have been observed the following places & came to conclusion that the places are Dokla, Onwari, Bharritola, Damkasa, Barpara, Ranimai Pahadi which is located 5 km away from our school.

We are sure that we will get attentions of all human being according to the presented information about land conservation use for prosperity & save for posterity.

## **Community Knowledge on Biological Indicators of Soil Quality**

*Guru Prasad, Mata Prasad, Deepam Ghosh, Aditya Maharaj  
And Kapil Thawait  
Kendriya Vidyalaya, Bainkuntha Pur, Dist: Korla, Chhattisgarh*

### **Abstract**

Difficulties in using biological indicators in the field are not an excuse for ignoring them. Indeed, they demonstrate the necessity for even greater investigation because they hold the key to assessing an important impact of land use on the soil environment. The biological diversity approach offers the potential to discriminate among soils in terms of the abundance of organisms with different functions. We tried our best to qualify soil with biological indicators and let the farmers use these methods for their benefits.

Since our country India is mostly depended on agriculture. It is necessary for the farmers to get the correct output from the farm to serve the entire population. But our farmers are still in misconception and they don't know the correct measure to increase the fertility of soil. While with some knowledge of BIOLOGICAL SOIL QUALITY INDICATORS, they can have a better harvest.

And so the goal of our project was to encourage farmers to know the soil quality of their farms before cultivation, with the help of some basic biological indicators and suggest some steps to improve the quality of their crops for keep the quality of land for years and years.

## **Land Resources for our Prosperity and for our Future**

*Geetika Vats, Kirti Malhotra, Rupal Jain, Pranjal Arora and Aarti Arora  
Nava Hind Girls Sr. Sec. School, New Delhi*

### **Abstract**

To conserve the land from the pollution of Bio Medical waste and to utilize it for producing electricity, for making cables of recycled plastics and for landfills. Any facility that migrates from land is known as Land resources for example; soil minerals metals etc we have to protect our land.

We saw that people are coming in contact with infectious Bio Medical Waste which is not good for their health and can cause many hazardous diseases, it also hazardous for animals as well plants we chose this topic to create awareness among the general public regarding Bio Medical Waste its hazards and available methods of mitigation. We saw that a normal dustbin contains 35% paper, 12% construction 9% plastic, 6% others and can be reduced to compost. Whereas in Bio Medical Waste 38% of waste is recyclable, 47% is incinerable and 57.4% of waste can be sent to secured landfills. We adopted two methods for our project such as Survey based method and Experimental based method.

Survey based method:- We surveyed in four areas :- WEST MOTI BAGH KISHAN GANJ SHASTRI NAGAR and KAROL BAGH. We asked some questions to the doctors like 1) How to treat Bio-Medical Waste 2) Do you know about Common Bio Medical waste treatment Facility (CBWTF). We found that 10 doctors in Kishan Ganj Knew that how to treat bio medical waste, 4 doctors have no knowledge about 1 doctor knew about it but are not very sure. After Fifteen Days we surveyed in the same areas and we found That doctors have now started sending their waste to incinerator plant. It increased from 20% to 40% in K.B., 8% to 13% in K.G and soon

Experimental Based Method;- We did many experiments in order to treat Bio Medical Waste. A brief explanation of all methods:-

Incineration is a waste thermal process where the combustion of organic substance taken place in waste material.

Syringes and medical plastics can be mutilated in a shredder. Autoclaving is a low heat thermal process and is designed to bring steam into direct contact with the waste.

## **Improve the Quality of Soil and Food by Organic Farming**

*Shivani A. Raval, Nidhi K. Andhariya, Devanshi A. Patel,  
Khushbu K. Oza and Manasi A. Soni  
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### **Abstract**

**PRE INTRODUCTION:** It is needless to state that the invention is the mother of necessity which can be from the quench of happiness of man-kinds. Development requires revolution and the revolution needs new routes. Who will prefer to walkover rough road instead of the smooth one? Construction of proper situation in improper situation is the demand of present tense; in the same way a rise of “ALIVE FARMING” is also a present demand and to get rid of from the side effects of chemical farming. The “CONJUNCTION PERIOD” remains blank to think towards the “Alive Farming.: In comparison with so many unwanted and objectionable bad effects of “Chemical Farming”. The “Alive Farming” is also possesses some confusing tacks. However to escape from the some possibilities are easiest resulting appropriate solution thereof in future.

**PROCEDURE:** -\_The Alive fertilizer is having medical characteristics due to its very important ingredients and higening essence. In other words it is a natural phenomenon for ‘alive farming’, ‘alive fertilizers’ and ‘alive pesticides’ medicines can be useful.

**IMPOIRTANCE:**\_With the use of a few chemicals, required quantity of water and the capacity of good productivity of land. “The land is Alive” confirming process God grace for our life and farming

**CONCLUSION:** -\_It can be seen that with use of ongoing dead land is losing its fertility but instead of that the Alive Farming keeps the land alive and this alive land is remains alive. For longer times and gives long life to human being also. Besides the use of very costly chemicals; a good quality and Alive Fertilizer is advised to the farmers and hope that they may have prosperous and successful lifestyle.

## **Prosperity of Soil Microbes - A Key for Maintaining the Soil Quality**

*Jaishwal Ranvir, Katariya Yash, Patel Keyur, Kathrotiya Dhairya  
and Bhatia Jeetn  
Nalanda Vidhyalaya - Virpar (Morbi), Gujarat*

### **Abstract**

#### **Introduction**

From nature we all living beings get so many Precious Things as god gifted. In which most important natural resource is soil. In soil microbial flora can be present & play a key role for maintaining the soil fertility & regulate the all natural Cycles like Nitrogen, Phosphorus, Carbon, Water cycles. But the human Anthropogenic Activities can kill soil microbes & ultimately it will destroy all the natural cycles.

#### **Problem Statement**

Mordern Agriculture Practice like excessive use of chemical fertilizers & pesticides can kill the natural microbes change all normal soil parameters & destroyed natural cycles.

Objective :- (A) Study of soil microbes & It's function  
(B) Study of different Anthropogenic Activity and its adverse effect on soil microbes.  
(C) Develop a sustainable and economical farming model.

#### **Methodology:**

1. Collection & Soil Preparation:  
Collection of soil sample from field of village Virpar: In this field last two years no any crop can be grown and not done any activity on it. Make a evenly fine particles of soil by crushing and sieved it.
2. Potting & Sowing:  
Take a 7 equal sized pot and full fill it with prepared soil sample than sowing a seed of Tuverdal 5-6 in each pot. Giving a water treatment to all in equal amount
3. Appling Specific Treatment to each Pot:  
In each pot we are giving a specific treatment like chemical fertilizers, pesticides, weedicides, bio-fertilizers (N-fixer, & P-solublizer culture), organic fertilizers manure and in one pot not giving any treatment it will used as a reference.
4. Preparation & Sterilization of Media:  
For preparation of selective medium we used a saurastra university Biotech Department lab for sterilization & Incubation of plate.

We have to sterilize the media in autoclave at 121°C for 15 PSI pressure for 30 minute, then after open it in to a laminar air flow & plating a both medium.

5. Total count of bacteria:  
Use the specific selective medium like ashby's manittol agar plate for N-fixer & Picovascular medium plate for P-solublizer with the help of that we done a total count of bacteria.

**DATA Collection:**

After giving a specific treatment we have to check the all parameters of soil & plants growth like

Physical Parameters : Plants height measured

Chemical Parameters : To check the PH of all soil sample

Biological Parameters: Total count of N-fixier & P-solublizer can be done by using specific selective medium.

Ecological Parameters : Cost report of chemical fertilizers & pesticides used /acer vs Bio-fertilizers & organic pesticides used / acer.

Total all data correlated with before treatment first observation (reference) vs after treatment observation& gives a conclusion on it.

We can say like chemicals can gives Adverse affect in all parameters so why we have to used this ? so bio fertilizes are the best alternative that can sustain the fertility of soil for the future generation.

**Follow Work:**

1. Use eco-friendly fertilizers like bio fertilizers (N-fixer, P-Solublizer)
2. Use organic fertilizers like manure and green farm yard manure
3. Vermi-compost, crop. rotation, use of organic pesticides etc.

**Merits & Demerits:**

1. This complete project is taught because in which we used modern scientific biotechnology it required modern instrument to this.
2. Like media preparation, medium inoculation, sampling, incubation, total count of bacteria, applying specific treatment to each pot etc.

**Future Project:**

In future we have to use more no of different Bacterial culture like antifungal - Tricoderma, Appling & Testing to other organic pesticides & fertilizers by using more number of pots.

## **Mismanagement of Land - an Analytical Study**

*Manvender Sharma, Vaishanavi Mehta, Aditya Salwan, Manas Nanda,  
Dhruv Sharma, and Pooja Verma  
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### **Abstract**

Food, cloth and shelter are the three basic needs of MAN. From the very ancient times, Man is trying to achieve it. We depend on land to fulfill them. Land is the centre of all our activities. But it's a hard fact that our population is increasing day by day and cultivatable land is decreasing day by day due to urbanization and industrialization. Above all, land is degrading by two phenomenons. One is natural like earthquake, floods, droughts etc. and other is manmade. It's a very surprising fact that due to several government policies, our land gets depleted. **Land acquisition policy** is also responsible for land degradation.

In our project, we have projected this idea by taking the example of land acquired by the government to set up "**DEENBANDHU CHHOTU RAM THERMAL POWER PLANT**" at Yamunanagar, Haryana. There are several loop holes in the acquisition policy. Due to these policies land remained unused for several years and ultimately degrades. The departments like **MITC, Irrigation, and Railways** possess excessive land for further expansion and it remained unused for several years and this is an alarming problem. Scientifically, if a land is not used for a bundle of years, then its fertility decreases and finally it became banzar after a period of time. It's a surprising fact that 23% of our land has become unfertile due to mismanagement of land by such policies.

Yamunanagar is a small industrial town of Haryana. It's the district headquarter. Its boundaries touch Himachal Pradesh, Uttar Pradesh, and Uttaranchal. The district is situated on the bed of river Yamuna. So its land is very fertile. Government had decided to set up a thermal power plant here. After survey, section 4 and 6 has been imposed on 14 villages of Yamunanagar district in 1980. About **1500 acres** of land had been acquired in 3 steps for setting up of this thermal power plant. Due to some political, economical, legal and financial reasons this project implementation became not possible till 2005. So about 1500 acres of land remained idle and unused for **24 years** and the nearby Industries dumped their ashes, disposable items there. And as a result of this, the entire area and its surrounding land degraded day by day. In 2005 the project implementation had been started and **Reliance Power Corporation** took its contract for about **2400 crores**. After the construction work of 27 months, finally the thermal power plant started its working with its first unit of **300 MW** in 2007. In this way it is very much clear that during the period of **1981-2005** neither

government nor farmers or any other agency used or look after this 1500 acres of land. So this problem of degradation of land was really alarming.

So we decided to raise the problem and its causes in front of the government officials and the relating persons because nobody was taking this problem seriously. Yamunanagar is biggest lakkad (wood) mandi of northern India and its land is very much suitable for poplar plantation. So we took the example of poplar plantation in the unused 1500 acres of land just to explain the productivity loss. After discussing the entire project with our guide teacher, we collected the data from government departments and nearby villages. We surveyed the **14 villages** and took the views of the villagers. They all told us that due to government policies and working, they have lost a lot. We did the analytical study of the collected data and calculated the lost of productivity. Surprisingly the production cost came near about **5 Arabs** and by adding bank interest it touched the mark of **17 Arabs**. With all these facts we met the chief engineer of Thermal Power Plant Mr. **Sushil Bansal** and showed him our calculations. He became very impressed by our project and assured us that on the left over land which is kept for future expansion of the plant, he will plant trees in suitable season to get maximum benefits from the land.

We have presented this presentation in district and state levels, the honorable judges appreciated our efforts and they also gave us some suggestions. We worked on those suggestions and after rectifications we added the remarks of bank officials and scientists to improve the project. We had given the solution of this problem that government should adopt government farmer partnership policy. In this policy the government should hand over the acquired land to the farmers for plantation till the construction work starts on it and the profit should be equally distributed between the two. Secondly after the acquisition of land for any project the government should hand it over to either forest or agriculture department so that some plantation or agriculture could be done on the land to get the maximum benefits from the land and to check the soil degradation.

It was a great achievement for us and in our future plans we decided to visit the nearby industries one by one to convince them to plant trees on the left over land till construction work starts. No doubt it's a very small step from our side but it may be a giant step in the future. We thank to the all concerned who directly or indirectly helped us to fulfill this project.

## **Effect of Burning of Crop Waste on Bio Diversity and its Management**

*Ravinder, Rajesh, Preeti and Ravi*  
*Govt. Sr. Sec. School, Bakheta, Dist. Rohtak (Haryana)-124001*

### **Abstract**

There is a great increase in agriculture products in Haryana and Punjab during the last three decades due to green revolution. The main products are wheat and paddy. But we had to face many problems due to the wheat-paddy crop rotation. Under ground water level is falling, the fertility is going down and loss in humus are the main problem. The farmers are burning the waste of wheat and paddy which is creating environmental pollution and bio-diversity disturbance attracted us to choose this topic.

#### **WORKING SYSTEM:**

We are five members along with our guide teacher in our team. 100 farmers were given the survey forms with questions besides this. We personally went to fields and checked the soil and crops there. We also had the help of agriculture scientists.

#### **ANALYSIS:**

85 farmers were doing agriculture work by cropping each other totally unscientifically. 60-80% peasants burn their agricultural wastes which is 15-18 quintals per acre, 25% of this is used as fodder for cattle and 7% in other works.

#### **HARMS DUE TO BURNING OF AGRICULTURAL WASTE:**

1. Loss of humus.
2. Loss of micro organism and useful insects.
3. Migration of birds.
4. Problems of pollution in all fields.
5. Burning of gases like SO<sub>2</sub>, CFC, etc. create problems to health.
6. There is a change in whether cycle.
7. Problem of global warming and green house effect.
8. Bio-diversity system is disturbed.
9. Rain fall is not in appropriate time.
10. Economic loss.

**SOLUTION TO PROBLEM:**

If we know about their elements of agricultural waste and do the activity of recycling the soil many become rich in phosphorus potassium and other nutrient minerals. It is shown in this table:

<b>Crop</b>	<b>Nitrogen</b>	<b>Phosphorus</b>	<b>Potassium</b>
Paddy	0.58	0.23	1.66
Wheat	0.49	0.25	1.28
Jawar	0.40	0.23	2.17
Milt	0.65	0.75	2.50

In Haryana 2029 M.T. waste products come out by burning these following pollutes come out:

<b>Gas</b>	<b>Quantity (M. Ton)</b>
CO <sub>2</sub>	0.426
CH <sub>4</sub>	0.004
N <sub>2</sub> O-N	0.008

If this situation remains then there would be 3.5<sup>0</sup>C to 5.5<sup>0</sup>C increase in temperature up to 2080 A.D.

According to Punjab and Haryana High Court decision Act No. 12/06/2003 E.N.V. III dated 16/09/2003 burning of agricultural waste in illegal and punishable.

**ADVICE:**

1. Mulching of agricultural waste.
2. Apply zero tillage
3. Dip the waste of the soil
4. Humus should cultivated
5. Organic work should be done by fungus
6. Do vermin culture
7. Use in small scale industries and non-agricultural field

**FUTURE PLANNING:**

The peasants were greatly affected by our campaign. We show them the practical work in model way. They follow us. In future we shall continue our mission through debates and workshops among the lay men so that we may get our target.

## **Physico-Chemical Analysis of Soil in Lahla Region of Palampur Valley**

*Kiran Kumari, Anita Raj, Ashu, Sachin and Rachana  
G.S.S.S Lahla VPO Hanglo, The Palampur  
Distt. Kangra, Himachal Pradesh*

### **Abstract**

India is vast country with a total area of 328.72 million hectare. Out of which 30% is covered by mountains, hills, and 25% by plateau and remaining 45% is occupies by plain valley. Thus about 189.74 million hectare area be used for cultivation. Ironically about 45% million hectre area is subjected to degradation problems like water erosion, wind erosion, water logging, salinity, acidity and other computer problems.

Improper use of land due to anthropogenic pressure has created many problems like shrinkage of arable land due to encroachment, decline in fertility due to over use of inorganic fertilizers without soil test. Information and land degradation. In land resources management approach, spatial distribution of land use, intervention of local scientific decision support system and control and conservation measures and of primary importance.

Soil performs multiple functions, starting from providing physical, chemical and biological support for plant growth. It provides habitat for variety of flora and fauna including human. It acts as natural filter and buffered media ageist abrupt changes occurring in it. It also acts as a sink of organic carbon and thus global CO<sub>2</sub> flux.

Physical properties of land are important because it determines the manner in. which it can be used either for agriculture forestry or other purposes .It includes is colour, water holding capacity (WHC).aerahon, texture, plashcity etc. Similarly chemical properties of soil are due to soil collides consisting of organic and inorganic phases. These properties include pH value, electrical conductivity (EC), Nitrogen (N) value, etc.

To study the physical & chemical properties of soil in Lahla region we first met soil scientist

The data so observed was as follow-

Sr.	Sample	Physical Properties			Chemical Properties		
		Colour	WHC	Aeration	pH	EC(ds/m)	N(kg/h)
1	Turmeric	Red	Medium	Low	5.9	107.2	145
2	Soya been	Brown	Medium	Low	6.4	116.6	134
3	Rice	Light Black	High	Low	5.3	54.6	183
4	Maize	Brown	Medium	Low	5.2	144.1	132
5	Potato	Blackish	High	Low	5.8	251.0	192
6	Peas	Brownish	Medium	Low	6.4	127.4	213

Thus we made following conclusions from above observations:-

- (i) Soil of Lahla region is mountaniary, as it was reddish in colour.
- (ii) Lahla region's soil is acidic. It can be corrected by adding lime.
- (iii) Salinity of soil is low.
- (iv) Lahla region soil lacking in appropriate amount of Nitrogen.
- (v) WHC Aeration of soil in this region is not up to the mark.

In nut shell our work was satisfactory, because here we studied soil properties in actual practice.

## **Recycling of Paper**

*Abhishek Thakur, Achit Thakur, Kesab Lohiya, Aanchal,  
Samriti Sharma and Pritika Thakur  
D.A.V Sen. Sec. School, Arya Samaj Bhawan, Near Ranital, Nahan  
Himachal Pradesh*

### **Abstract**

Major uses of land resources include forestry, agriculture, housing & urban industrial activities. The world land resource that includes soil, water & forest are under great pressure, that is the reason why we are now talking about sustainable use of land resources. Forests are one of the most precious natural resource but they are under great threat due to deforestation. We use forest for different purpose, for wood, furniture, decoration and for paper making. Today the world wide consumption of paper has been a reason by 80% in past 40 years. With 35% of harvested trees are being used for paper manufacturing. Logging of old growth trees account for less than 10% of wood pulp. But it is one of the most controversial issues. Plantation of forests from where the majority of wood for pulping is obtained is generally a monoculture and this raise concern over the ecological effect of the practice and deforestation. And due to deforestation, the land resources will also be affected. As more & more trees will be cut soil erosion and land degradation will happen. It also affects the fertility which will lead to depletion of nutritional value of the soil. Therefore, we chose the project "recycling of paper", under the guidelines of our guide teacher Ms. Bhawna Thakur.

To check the awareness of people towards the making & recycling of paper, we distributed a set of questionnaire to the people in our area, i.e. near Dhabbo Mohalla. When we asked people that how do they dispose of waste paper, 40% of them told that they do so by dumping, 30% said by burning & 30% said by recycling.

Even today 46.6% people do not know that from which material paper is being prepared and still 50% of the people do not know the benefits of recycling of paper.

When we asked people that whether they stop their children to waste paper and make them understand the importance of recycling of paper, only 40% people answered in favour of this. 20% people said that they use eco-friendly notebooks like classmate. 43.3 % people said that the trend of slates should be re-introduced to prevent the wastage of paper, but only 10% people said that their children use slates to do rough work at home.

At present, only 30% people believe that notebook concept should be replaced by e-book concept.

After doing this survey, we found that the people are not much aware about the recycling and the procedure of paper making. Therefore in this survey we also effort to aware the people about the recycling and the procedure of the paper making.

In order to collect more information regarding the process of paper making, we have also visited RUCHIRA PAPER FACTORY situated in Kala Amb.

For making the paper, we used waste paper and to collect the waste paper we have put a container in our school campus so that all children throw waste paper in that container only. In this process, we cut the paper into small pieces and then boil it in water. After that, we grinded it with water gum with a grinder. As a result we got a paste of paper pulp. Then we dipped this paper in a tub containing water. After this, we made a frame from wood and attached a sieve on one of the side of the frame. Then we dipped this frame & collected all the pulp in a frame. Then we used a formica sheet to rinse out the extra water and make pulp flatten. Then to make it thinner, we rolled a roller over it and allow it to dry. To make drying process faster we used a hair drier. So in this way, we got a new paper.

Now we are using it for different purposes like scrap pads, letter pads, decoration purpose, rough work etc. To make it on a higher level, we have organized recycling week. At the end of the recycling week, we have a greeting card competition in which children used recycled paper for making their greeting cards.

Recycling of paper can help us in using resources sustainably. Not only land resources but recycling of paper saves natural resources.

For every ton of paper recycled:

- 17 trees are not cut down.
- 7000 gallon of water is not used.
- 3 cubic yards of landfill space will not be filled.
- Enough energy will be saved to heat our home for 6 months.
- 850kg of wood pulp will not be used.

So while saving a tree as a natural resource is great, it is by no means the only natural resource being saved. Additionally, when you use recycled paper you aren't only saving trees but in some cases you are saving diverse forests & many other resources.

## **Crop Cultivating Efficacy of Land Under Walnut Trees**

*Junaid Javaid Bha,t Muhtashim Ishaq, Zaid Iqbal and Farhat Jami  
Radiant Public School, Anantnag, Jammu & Kashmir*

### **Abstract**

The valley of Kashmir, known as paradise on earth is famous for its walnut trees, which are its prestige. In this project, we tried to take an initiative for the better usage and prevention of the uncultivated land under the walnut trees from being wasted away and mobilize and make people of this area aware about the same. The common people of Kashmir think that nothing can be grown under the walnut trees, which is quite wrong and this leads to the wastage of a large area of cultivable land resource, particularly the land of the walnut gardens of Kashmir. On surveying the land under the walnut trees at different sites, we came to know that a lot of area lying under the walnut trees is quite devoid of plants and greenery as it has been left unused. We highlighted that while on one hand the walnut trees release the toxic substance Juglore through their leaves, hull etc that converts the soil under them into an acidic medium but on the other hand, there are certain specific plants that can grow successfully under the walnut trees. We tried, by experimentation with different plant seeds and variable amounts of toxicant containing wainut parts, to successfully choose and recommend certain plants to be grown under the walnut trees.

Further, we launched an awareness campaign and tried to create a sense of awareness among the owners and cultivators of walnut trees, and above all the common people and farmers to prevent the wastage of the precious land and ensure better crop yield in our valley for the safety and use of the present as well as the future generation to come.

## **Construct Wet Land Save Land**

*Zahid Iqbal Shah, Shikh Mohsin and Arsalan Fayaz  
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### **Abstract**

The important chain of wet lands of the western Himalayas are found in the valley of Kashmir which harbour rich genetic diversity of both flora & fauna. However interference & indulgence of man in the natural activities have converted various wet lands into agricultural ones. We have in 2009 under the same organization worked on one of the dying wetlands. The Nambal. In order to compensate this loss, we thought of creating an artificial wet land to restore the lost genetic diversity of both flora & fauna. The use of wet lands to treat effluents is not a new idea. Thousands of years ago, natural wet lands were used by the Chinese & Egyptians to clarify liquid effluents. However the first constructed wet land was not used until 1904 in Australia. The first botanical treatment of waste was not reported in Europe till 1950s. Nevertheless, it is now recognized that constructed wetlands are an economic way of treating liquid effluents & even raw sewage. India's first constructed wetland is installed at Sanik School Bhubaneswar in Odisha. Meghalaya is the leader having most number of wet lands. However in J&K there is no such wet land & this is going to be the first constructed wetland in the state. There are several waste lands in Srinagar Municipality as well as in other areas which can be utilized for this purpose. Due to the absence of wetlands in the state, there is a pressing pressure on the several lakes which are dying because of the pressure.

Recently wet lands for waste water purification have been constructed for treatment of sewage and urban runoff. Wet lands also show good potential for concentrating metals from industrial waste waters and mine seepage. Constructed wet lands include open water pond like systems usually sediment lined, containing floating, submerged and emergent plants. Another design is based on the use of permeable substrata such as gravel, commonly planted with emergent wet land plants such as Typha, Phragmites or Cyperus. The waste water percolates through the gravel giving better access to the plant roots and rhizomes and exposure to oxygenated conditions in the rhizospheres. Generally emergent plants influence metal storage in directly by modifying the substratum through oxygenation, buffering pH and adding organic matter. High metal removal rates close to 100% have been reported in experimental systems for sewage and metal amended nutrient solutions stimulating acid mine drainage water but only on the small scale or short term. Constructed wet lands consist of soil filled beds with aquatic plants. Waste water is treated when flowing through these beds. The results indicate that properly designed constructed wet lands can operate satisfactorily in a cold climate

## **Reform on Under Ground Water Level by the Rain Water Conservation in the Nagar Untari Block**

*Tejaswi Kumar, Deepesh Kumar, Suraj, Abhishek Kumar  
and Amir Usmani  
RK +2 High School, Nagar Untari, Garwa, Jharkhand*

### **Abstract**

The land is the important resource in all natural resources. These resources mainly develop & maintain bio-diversity like climate and plant tree etc in the form of water & soil. This is also the source of economical production like crops production and in the other form of industrial and social affairs. So water resource is very important for maintenance of land and quality of soil. It is also important for the durable agriculture system of people. But then we shall able to make the agriculture system or other affairs when the quantity of water is favorable it's in the internal part of the earth. We child scientist trired to guide by the project of the villagers at Nagar Untari block of Garwa district in the Jharkhand state that how like we can save & use of local land the community knowledge & community activities.

The objectives of the project or to accumulate the rain water, to do improvement & increasing the underground water level by main structure of rain water storage like-Dam, embankment, Tank & new structure like recharge pit, To save the land from die-up, to make up the agriculture system & solution to crises of water, to take fixed quality of land and after having necessary survey, a scientific solution on it has been proposed to the villages and other members to use of the land resource for development & preserve for future generation. Scientist says that if use of water has not recharged, then till 2025 Jharkhand will be converted into Dry Zone.

## **To Detect Loading Limit of $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ in Sandy and Clayey Soil of Hazaribag**

*Baby Muskan, Amish Kumari, Nisha Roy, Neha Bharti, and Priya Shree  
Indira Gandhi Balika Vidyaays, Hazaribag, Jarkhand*

### **Abstract**

Plants need 16 nutrients for proper growth in soil. They get oxygen and carbon from air and Hydrogen from water. 13 nutrients get from soil. In these 13 nutrients they need 6 nutrients in large quantities called macro nutrients and 7 nutrients need in small quantities called micronutrients. Copper is also one of them. These help plants in the formation of chlorophyll, enzymes and amino acid. Deficiency of  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ , causes chlorosis in plants. Shape of plants gets abnormal and they get brown spot on it. According to the information from Internet, Soil of Hazaribag is copper deficient. To remove this problem, we can use  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$  in soil. That is why some questions strike our mind as how much amount of  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$  should be added in soil, so that it can support plants for proper growth.

Copper is an essential micronutrient for the proper growth of plants. There is deficiency of copper in soil of Hazaribag and  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$  is used to fulfill the deficiency of copper. Thus, agriculture Scientists should aware farmers of Hazaribag for the use of  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$  in soil because it has dual character. Therefore, it is essential to recognize the type of soil before using  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$  because in sandy soil more amount of  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$  is required to increase its fertility while in clayey soil, less amount of  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$  is good because it is a always fertile.

After adding  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$  in sandy soil, we get increase in salinity decrease in organic carbon, no any change in amount of phosphate and decrease in potash, which is helpful in the growth of plants.

The amount of  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$  in Pot-2 of clayey soil is 200mg. After adding  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$  in clayey soil, we get not any change in salinity, decrease in organic carbon, increase in the amount of phosphate and Potash, which is helpful in growth of plants.

## **Study of Rubber Particles in Soil**

*Md. Munazer Ul Haq, Mahesh K. J, Sharn Ku A.Y, S.  
Manzer Fatima and S Sakina Fatima  
Kayaka Foundation High School, Gulbarga, Karnataka*

### **Abstract**

The project aims to study the effect of rubber particles resulting pollution on soil caused by vehicular traffic. Gulbarga is a medium city as per RTO Gulbarga statistics, everyday nearly 2, 25, 000 vehicles run around Gulbarga using 1 million tires. The survey conducted by our team near school campus from Rammandir Ring road circle to Siddeshwar swamy Math, 1000 vehicles move on road every day. Due to rubbing of the tires on road while vehicle is moving rubber particles are left behind. It is found that an average of 16 grams of rubber particles is deposited on 1km road. The particle size varies from 5microns to 1 micron.

The tires are made up of synthetic polymers which are not easily bio-degradable further these rubber particles contain harmful chemicals like sulphur and carcinogenic heavy metals like cadmium and titanium. These rubber particles deposited in soil reduce the porosity and permeability of the soil resulting biological degradation of soil. The flying rubber particles bring air pollution and cause cancer, asthma etc.

The team suggests that the harmful effects of the rubber particles can be reduced by using tires with biodegradable rubber, proper alignment of wheels and maintaining good roads.

## **An Experimental Study on Biological Degradation of Soil**

*Sukubhai B.Hawaladar, K.N. Baddigoudas, M.K. Hubhalli,  
Anasuya. C. Kotagi and Anita A. Garajur  
Sri Ramalingeshwara High School, Udikere, Taluk: Bailhongal,  
District: Belgaum, Karnataka*

### **Abstract**

Soil is the natural main resources for maintaining life on earth and biological diversity. Now a days because of fast biological degradation soil is losing its productivity. Thus the project aims to find out new methods to regain the productivity of the soil.

An experiment is designed taking parameters like 1) Nitrogen fixing- Rhizobium bacteria 2) Phosphorus Solubilizing Bacteria (PSB) 3) Organic matter 4) Nutrients 5) Temperature. The experiments are carried out to study the effect of these on biological degradation of soil compared with control experiment. It is observed that in Bengal gram, nitrogen fixing bacteria reduced 100% biological degradation of soil. PSB in maize has reduced 75% biological degradation of soil. Addition of organic matter and nutrients also reduced 75% of the biological degradation of soil. The temperature in the range of 20-25 degree Celsius is found to be optimum in increasing productivity of the soil.

The team suggested to use bio fertilizers, organic matter to reduce biological degradation of soil and thus increased productivity of the soil.

**A Preliminary Study on the effect of the Liquid Pollutants in the Characteristics of the Soil of the selected area of Thamarakkulam Panchayath in Alappuzh Dist**

*Amritha S.Drisya. R. Kumar, Chinnu.L, Aryalekshmi R.G, Athira. M.J  
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**Abstract**

In general, the soils of Kerala are acidic kaolintic and gravelly. They have low water holding capacity and high phosphate fixing capacity. Climate, topography, vegetation and hydrological conditions are the dominant factors of soil formation. On the basis of the morphological features and physicochemical properties the soil of the state has been classified into red loam, laterite, coastal alluvium, and saline black soil and forest loam. These types of soil will easily absorb liquid pollutants.

Soil pollution is defined as the buildup in soils of toxic compounds, chemicals, salts or disease causing agents, which have adverse effects on plant growth. There are many different ways that soil can be polluted. They include, discharge of industrial waste, contaminated water, excess application of pesticides, solid waste, atmospheric pollution, waste of black oil from workshop, acid waste used for rubber plantation, detergent soap solution and of course due to petroleum products. In our study area (selected) of Thamarakkulam Panchayat there are a number of cashew factories, workshops where motor vehicles are repaired, rubber estates and cloth washing areas. The study about the impact of liquid pollutants in soil has not yet been done in this area. In the above circumstances we decided to conduct a preliminary study about the influence of liquid pollutants in the soil of this area.

The methods used for the study were experiment and survey. We selected three fields each of agricultural field without contamination of liquid pollutant, contaminated with detergent soap solution, rubber acid, and black oil from workshop and polluted with the waste liquid from cashew factory. Then we collected sample soil from these areas and found out the texture, water holding capacity N.P.K. and temperature. Then we sowed pulse on each soil samples and measured the length of the area to know about their awareness about the effect of liquid pollutants in the soil. After collecting the data we analyzed it came into the following major conclusions.

Liquid pollutants will not affect the texture of the soil, Liquid pollutants change the  $p^H$  value adversely, Black oil and cashew factory waste reduces the nitrogen content and presence of black oil affects the phosphorus presence badly. Liquid

pollutants will not change the presence of potassium adversely; Number of people who knows about the effect of liquid pollutants in soil is very less. After completing the study, we conducted an awareness class for the farmers of the area with the help of the Agricultural officer. We took three months and 12 day to complete this project. We hope this project will help a lot to the farmers suffering from liquid pollution.

**A Preliminary Study on the Impact of Developmental Activities on the Land use Pattern and Environment in the Selected Areas of Kazhakootam and Attipra Regions of Thiruvannthapuram District**

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**Abstract**

Developmental activities have affected paddy cultivation in Kerala state drastically. As a result of that, area of rice cultivation has decreased by 63%. This has prompted us to conduct a study on the impact of developmental activities such as the construction of a bypass road, a K.S.E.B substation and the techno park in selected areas of Kazhakootam and Attipra villages.

The following were the aims and objectives of the project:-

- To study the impact of developmental activities on the environment of the study area.
- To study the effects of developmental activities on the land use pattern of the study area.
- To study about the rate of urbanization and migration owing to the developmental activities.

Maps showing the land use pattern of the study area in 1989, 2003 and 2011 were prepared to assess the changes in the land use pattern. Physical and chemical properties of the soil samples from the six selected stations were studied. Depth from the ground level to the surface to the water table of four selected wells from the reclaimed land and normal land were studied (before rainy days, during rainy days and after rainy days).

Interviewed old people of the study area and conducted survey in 75 houses of the study area to gather information on changes in the land use pattern and on the environmental problems faced by them. Fertility of the soil samples were studied using spinach seedlings. We also conducted the earthworms present in the area of 1 feet x 1 feet x 1 feet pit.

Drinking water samples were collected from the study area and studied their physical and chemical properties and the presence of coliform bacteria. We

started our project at the mid of May and ended on 30<sup>th</sup> October 2011. The following were our major findings:

Before the starting of the developmental activities in the study area, there was paddy cultivation in the paddy field. By 1989, paddy cultivation was restricted to 19.14% of the study area. By 2003, paddy cultivation was restricted to 7.08% of the study area.

Now, in 2011 there is no paddy cultivation in the area 2.30% of the paddy field remains fallow. Launching of the Techno-park led to the urbanization of the area. As a result vast areas of paddy field and marshy areas were reclaimed for constructing buildings flats etc.

Prices of the land have increased enormously, depth from the ground level to the water table of the wells in the reclamation paddy fields was less. No one in the study area tested their soil. 64% of the people use well water for cooking and drinking pH of the soil samples from the six stations was suitable for cultivation. Soil of the abandoned paddy fields is still rich in nutrients and is fertile. Texture of the soil sample from the six stations was ideal for agriculture

The following problems were come across during the study:

Drainage facilities provided in the bypass road are not sufficient for maintaining the natural flow of water from the eastern side to the western side. The balancing and narrow pipe culverts are not properly maintained. Reclamation of paddy fields resulted in flooding during rainy season and drought during summer season. 30,000 people are employed in Techno Park. A large number of labourers have immigrated to the study area for construction work. As a result of that there is rapid urbanization and increase in population density of the area. Price of land in the area has increased several folds.

The following are our suggestion to abate the above mentioned problems:

Acquisition of paddy fields, cultivate lands and marshy area for developmental activities is to be stopped, paddy cultivation is to be started in abandoned paddy fields, Mechanisation and group farming are to be introduced, scarcity of farm labourers is to be overcome by starting societies of farm labourers (especially women labourers) in line with Kudumbasree units.

The existing culverts in the bypass are to be widened and properly maintained, reclamation of paddy fields and marshy areas is to be stopped immediately by enforcing the law.

The following activities were conducted as follow up action.

A seminar on 'Know your Land' by Dr. Sam T. Kurumthotikal, Professor of Soil Science, College of Agriculture, a poster drawing competition on the topic 'Soil' and a quiz competition on the topic 'Soil' and also an awareness campaign for the farmers and local people at Kazhakodam.

## **Diagnosis of Acid, Saline and Alkali Soil for Their Better Management**

*Danish Khan, Utkarsh Gupta, Amartya Roy and  
Samathya Choudhury  
Shri Satya Sai Vidya Vihar, Gail Vijaypur, Guna, Madhya Pradesh*

### **Abstract**

For the knowledge of this topic we interviewed an agricultural employee (Shri P.S. Tomar, Agriculture Scientist, Guna) he told us much about management of soil and testing of soil. After that we met Dr. Jagpal Singh (Area Manager Marketing NFL) He explained us about soil testing and also told the method of testing potassium. We searched different national and international agricultural websites for gaining knowledge about the subject matter. We did experiments, first for finding pH of different types of collected samples of soils, second for requirements for neutralizing soil and third we checked pH of six different fertilizers and the impact of most commonly used fertilizer here i.e. Urea on the soil and the last we did experiments on four different pesticides regarding pH and their impact on soil. We did survey on Ninety Three farmers of nearby villages and their relatives who are far away situated by phones. We asked eight questions to them to know the present situation of farming.

We found that the awareness about soil testing, pH and its impact and how to cure the soil acidity and basicity is very less. Our main observation was, they are not using balance amount of fertilizers. We distributed photocopy of advertisement from department (M.P.) about balance use of fertilizer. We also distributed photocopies of the leaflets collected from Kota Dussera Mela Agriculture Department stall on 16/10/2011 about the methods for the balance use of fertilizers and latest technique of cultivation. Taking our experiment as base we imparted knowledge about neutralizing the soil correctly and also told them to contact agriculture department to INCREASE CROP PRODUCTION AND MAKE FARMERS EARN MORE.

## **Agro Practices of Beterl Vine And Management of Diseases**

*Akanksha Khare, Sakshi Agrawal, Dhairya Chhatre,  
Divya Kasliwal and Sejal Varshney  
Sagar Public School, 9a-Saket Nagar, Bhopal (M.P)*

### **Abstract**

Our school, in the month of June organized an educational visit to Suhagpur. During our visit we observed that the farmers were facing severe fungal as well as bacterial infections of betel vine which were actually responsible for their low and poor quality production. In this serious condition farmers generally prefer using chemical pesticides and fungicides which cause a lot of harm to the soil and to the environment.

Considering these points we thought of finding out a natural drug that can be helpful in combating with this serious problem.

Our first step was identification of casual micro organism. For this purpose we were required to prepare PDA medium. So by using 300gm of potatoes, 20gm of agar-agar powder and dextrose powder, we prepared PDA. Now for the purpose of sterilization we didn't have autoclave. So, we made use of pressure cooker.

Then when we got that the organism was *Phytophthora Parasitica* we moved on to our next step i.e. selection of drugs and preparation of extract. We chose the biomaterials namely turmeric, garlic, Neem, black Tulsi and ginger. After the preparation of extract and dilutions with distilled water we moved on to next step.

Moving further we did IN-VITRO STUDY. In this we first of all poured potato dextrose and prepared dilutions of drugs in 25 petridishes. 5 plates were meant for control. After the solidification of Petri dishes we dug wells and inoculated the organism into all of them. After continuous five days observation we found GARLIC to be the best among all as it showed 100% inhibitory effect in all its dilutions. Similarly, we also did IN-VIVO study that is stuffy on betel vine leaves. In this case also we got the positive results in favor of garlic. It is evident from this investigation that garlic that is *ALLIUM SATIVUM* is highly fungi toxic against the test pathogen *phytophthora parasitica*.

## **Use of E-Class Soil for Preparation of Bricks- an Alternative for Normal Bricks which Causes Loss of Fertile Soil**

*Vedashree Relkar, Komal Tayade, Minal Nikhade, Sakshi Patil and  
Supriya Kulkarni  
Bal Shivaji High School, Maharashtra*

### **Abstract**

#### **Introduction: -**

Soil, a natural resource is raw material for many small scale industries like bricks, tiles, potteries etc. However we are wasting the fertile dry lands, in such live development projects. It is necessary to find some alternatives for such fertile soil. In our project we tried to make bricks from e-class soil (unfertile). We studied some physical and chemical properties of e-class soil and fertile soil.

#### **Importance of Project:-**

E-class soil contains 10% of organic matter and is acidic in nature. Hence it is non-fertile whereas soil used for bricks contains 20% of organic matter and neutral in nature which is very fertile. Congress grass (*Parthenium hysterophorous*) paper, add huge amount of waste material. In this project we adjusted the organic matter of e-class soil by adding waste material like congress grass, paper, husk etc. This help to reduce waste material and conserve fertile soil.

#### **Practical method:-**

For practical method, we collected some soil used for bricks and some e-class soil. We prepared bricks from e-class soil by adding organic matter in it artificially and of fertile soil. Then we studied their physical properties like density, porosity, and compressive strength.

**Observations: -**

The compressive strength of simple brick is 657.14 g./c.c. The compressive strength of paper bricks and bricks made of congress grass is 656.25g./c.c. and 531.25g./c.c. resp. The strength of husk bricks is 95.24 g./c.c.

**Conclusion: -**

Bricks can be made using e-class soil by adjusting organic matter in it. The brick of e-class soil +Paper are nearly equaled strong, porous as simple brick. Bricks of e-class soil + husk were brittle. We can't use it for brick purpose.

**Survey Method:-**

For survey method we went to brickyards of Village Karodi, Tq, Akot, Dist Akola and Village Murtizapur, Tq. Murtizapur, Dist Akola. We interviewed 5 brickyard owners of Karodi and 5 brickyards owners of Murtizapur. We also interviewed 10 builders of Akola City.

**Conclusion:-**

At Karodi all the 5 brickyard owners are using useful fertile soil for brick purpose. At Murtizapur all the 5 brickyard owners use useful fertile soil, but they add e-class soil also in it in a very small quantity because of scarcity of fertile soil. The 10 builders we visited agreed with us that normal bricks making causes loss of fertile soil. 7 out of 10 are ready to use the bricks made by using e-class soil and organic waste material giving nearly equal strength.

## **Study of Caused of Waste Accumulation in Zunheboto Town and Affective Waste Management**

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Cornerstone School, Zunheboto, Nagaland

### **Abstract**

Wastes can be generally described as any material which isn't used and is no longer wanted or needed. A wide variety of wastes are generated by human beings through various activities like domestic, commercial, industrial and agricultural activities. Apart from human activities, natural calamities, such as earthquake, landslide, thunderstorm etc can also lead to waste accumulation. Zunheboto is a very small town but the amounts of wastes in this small town outnumber the small population. This leads to wastes accumulation.

The most common wastes usually seen around the town are plastic bags or poly bags in huge numbers, old cartons, rags, unused household item plastic bottles, organic household wastes. Due to absence of proper trash bin or garbage disposal system, most of the town people dump their wastes in the drainage or just on the streets littering the streets this way.

Improper wastes disposal being the main reason for the accumulation, since the locals are not well educated about the adverse effects of improper waste disposal, tones of wastes can be seen lying in every corner of the town. If this waste is not properly managed soon, it may create and is already creating adverse effects on human and animals' health. Plastic wastes cannot be decomposed by microorganism in the soil. Careless disposal of plastic chokes the drains, chokes the soil and hinders the absorption of water by the soil. If eaten by animals such as cows, it can kill them. Plastic bags can also contaminate food stuffs because of poisonous dyes getting absorbed into foods. If burnt, they release poisonous fumes and pollute the air. It also destroy anthropogenic organism. It causes landslides and degradation of soil. Since enough attention isn't given by the Municipal Committee, we keep dumping our trash in every corner, thus leading to waste accumulation.

Waste can be most effectively and easily managed by first educating the public about the ill effects of improper wastes disposal. Secondly, enough wastes bin should be made/ installed in places where the presence of wastes is high. Taxes or fines can also be imposed on people dumping their trash carelessly. The Municipal Committee can also try encouraging people to use cloth bags instead of plastic bags. Efforts can be made to spread awareness about the adverse effect associated to improper waste disposal.

## **Sustainable use of Land**

*Rakovi Pohena and Vizosul Natso  
Alderville School, Jotsoma, Kohima Nagaland*

### **Abstract**

In recent years, the Government of Nagaland has initiated the shifting of its offices and other establishments to the north of Kohima due to congestion in the main town. The Nagaland University, Regional Institute of E-learning & Information Technology, and High Court complexes has been allotted land on a ridge adjacent to Meriema Village, which comprises the study area. Besides, other departments of the Nagaland Government are in the process of site selection and construction here.

Landslides and related phenomena are frequent occurrences in this hilly region of precipitous slopes, loose soils, weak rocks, and abundant joints and faults. The area is also affected by prolonged and heavy rainfall. Human activity has also left its imprint in this unstable area. The present expansion is generally unplanned, where slopes are cut indiscriminately thereby leading to much vulnerability. This area comprises mainly the Disang group of sediments characterized by splintery shales with thin beds of siltstones and fine-grained sandstones. These rocks are highly crumpled, and weathered to varying degrees due to which much surface instability exists.

Studies have been conducted in an area lying between 25°43'23.77"N and 25°43'27.16"N latitudes and 94°05'26.66"E and 94°05'31.39"E longitudes, and is part of the Survey of India toposheets 83 K/2 NW. The factors responsible for instability, including lithology, structure, slopes, land use / land cover, and groundwater conditions, are studied, with a view to achieve the following objectives: detailed study of unstable zones, determination of factors responsible for the instability, and to provide appropriate prevention / mitigation measures. The methodology comprises field studies, determination of strength of rocks using Point Load Index Tester, determination of RMR (Romana, 1985) & SMR (Beniawski, 1991), and kinematic analyses (Markland, 1985) performed using GeORIENT to determine probable mode of failure.

Appropriate recommendations are provided to control the present instability and also to check future imminent slope failures basing on the results obtained from the study.

## **Changing Trends in the Land use Pattern Around the City of Bhubaneswar**

*Avilash Guru, Swastida Pradhan, Tirtha Tilak Pani, and Amrit Acharya  
Chinmaya Vidyalaya, Therubali, Rayagada, Orissa*

### **Abstract**

#### **INTRODUCTION**

Soil is living skin of Mother Earth Land available in our locality is under pressure due to change in land-use pattern. Topsoil needs millions of years to form, whereas due to anthropogenic activity, we are losing the topsoil rapidly resulting in loss of soil biodiversity. Soil contains millions of microbes which help maintain fertility of soil as well as ecosystem through biogeochemical-cycling. We tried to find out difference between microbial flora in agricultural land and construction sites' land. For buildings, a lot of bricks are required which are manufactured using fertile topsoil.

#### **OBJECTIVES :**

- Trace reasons behind increasing pressure on agricultural land
- Observe changing patterns of microorganisms present in soil due to anthropogenic activity.
- Estimate future impacts
- Create awareness to preserve land – resources for posterity
- Find solutions to decrease pressure on agriculture

#### **METHODOLOGY:**

- Area was surveyed to know status of crop fields and different types of pressure occurring on agriculture.
- Interview format was prepared to assess responses of the fifty residents of Baliana area.
- Microbiological study of different microbes and their population in soil samples of agricultural fields and construction sites was done.

### **LABORATORY EXPERIMENTATION:**

The microbiological study of soil samples was conducted in microbiology laboratory of OUPT

### **FINDINGS:**

- A. Reasons behind pressure on agricultural land
  - ✓ Decrease in agricultural land area.
  - ✓ Inability of farmers to produce and earn money from non-land based units.
- B. Microbiological observations
  - ✓ Microbial diversity of agricultural soil is higher in number than construction sites' soil.
- C. Estimating future impacts
  - ✓ Decrease in agricultural land, food grains production and microbial-biodiversity of soil
- D. Create awareness for efficient farming
  - ✓ Sensitizing awareness programs
  - ✓ Organizing community-awareness week and door-to-door campaigns
- E. Solutions to decrease pressure on agricultural land
  - ✓ Construct high-raised buildings
  - ✓ Non-land based enterprises
  - ✓ Different cropping systems.
  - ✓ Integrated farming system

### **DATA ANALYSIS**

The collected information was analyzed by standard statistical procedures and results interpreted.

### **CONCLUSION**

We should conserve microbial biodiversity of soil for our posterity and encourage high-raised buildings in small patches of land in order to reduce pressure on agricultural land.

## **Knowing land quality for improving productivity and awareness campaign at Paikapada Village: A Case study**

*Ansuman Panigrahi, Sangeeta Dash, Subhranshu Sekhar Sahoo,  
Sidharth Padhi and Pragnya Kar  
Chinmaya Vidyalyaya, Therubali, Rayagada, Odisha*

### **Abstract**

The efficient management of land is essential for economic growth and development of rural area. The traditional way of agricultural practices decreases the productivity. So, today the farmers are going for modern farming practices which involve the use of large amount of bio-fertilizers and bio-pesticides in order to maintain the fertility of the soil. So, it is our duty to care of the land because once the land gets erode by different agents we can have a loss of a valuable resources i.e. our land which is the medium which decides the diversity of life in an area. The human activities can increase the productivity of land by proper knowledge of community regarding the land use which can make barren land into fertile one. We have chosen this project because this gives us the idea about how can we increase the productivity of land by increasing community knowledge on land use.

### **OBJECTIVE:**

Knowing land quality for improving productivity & awareness campaign at Paikapada village: A case Study

### **SURVEY AREA:**

Our surveyor is village Paikapada of Kolnara block, Rayagada District. We found that some farmers do not have the proper knowledge regarding the type of cropland to be taken for the cultivation of crop where as few has the knowledge about this. For this we had collected the soil sample for analysis in our lab.

### **METHODOLOGY:**

Three type of farming lands are selected among thirty different farmers and made a report on type of soil, type of land its PH value, water holding capacity and mineral content of the soil

### **FINDINGS**

Our study on types of land and crops shows that productivity can be increased if the community knowledge is accompanied with scientific based agricultural practices and using agro based chemicals. We found that the PH of the soil is 7.24 (Neutral) and amount of Phosphorus (95%) and Potash (5864%). For this we recommend the farmer to use FYM @MT per acre.

### **CONCLUSION:**

The production of the soil is decided by the types of soil size of the particles, water holding capacity of the soil, PH of the soil and mineral nutrients & modern methods practiced by the farmers.

**Effect of Municipal Solid Waste Disposal Practice on  
Environment and Soil Quality of Land Fill  
Area in Puducherry Region**

*S. Anthony Gabriel, N Sakthivel, S Kishrekumar, V Mougil, N Nagarjun  
Petit Seminaire Higher Secondary School, M.G. Road, Puducherry*

**Abstract**

Land represents an important resource for the economic life of a majority of people in the world. Land use therefore is a highly dynamic process. Today this research focused on the dynamics of land use with special emphasis on the management of municipal solid waste, because now-a-days it is the talk of the topic that the Municipal solid waste management of Puducherry region is becoming most horrible which is due to enhanced economic activities and rapid urbanization. Hence the present study was aimed to study the current municipal solid waste management status to quantitatively estimate the generation of MSW among the residents and in dump yard, to create an awareness program on MSW management at house hold level, to analyze the soil (microbial load, nutrients and heavy metals) in and around dump yard. The area selected for study is located at Karuvadikuppam, Pondicherry. Data was collected on House hold waste management and environment condition near the land fill area of Puducherry, quantification of municipal waste was done among residents and in dump yard (Karuvadikuppam), awareness campaign was conducted on MSW management at house hold level and soil samples were collected for various analysis. The result revealed that irrespective of the soil samples collected from within the dump yard and outside the dump yard, it was noticed that there was a wide variations in the microbial load, nutrient and heavy metal contents. The presence of heavy metals namely pb, zn, fe and cu, cr in the soil within the dump yard has been detected and found to be close to the acceptable limit which needs to be monitor in future. The classic finding of the study mentioned above could be attributed due to large quantities of waste being dumped and no scientific disposal methods are practiced in the selected area.

## **A Comparative Analysis of Proficiency of Different Methods Used to Maximise Crop Yield in Salt-Affected Soil**

*R.Sai Siddarth, S. Arvinth, Abishek Gurumurthy, N Krithika, P Swetha  
St. Patrick Matric Higher Secondary School, Saradambal Nagar,  
Puducherry, Puducherry*

### **Abstract**

Improving the yield of cultivation in salt-affected soils through different treatments: Soil samples collected from **Thavalakuppam**, Pondicherry (4 Kms off coast). Soil certified "**PROBLEMATIC**" by the "Govt. Soil Testing laboratory", Thattanchavadi due to high Electrical Conductivity (EC). Soil treated in FOUR different eco-friendly methods viz Dry-leaf mulching, Stone mulching, Charcoal soaked in cow's urine, Vermin compost to increase the yield when compared to the untreated soil sample collected.

### **Methodology:**

The seeds were soaked overnight. The collected sodic soil was put into 10 pots. Charcoal was ground up and soaked in cow urine for a week in order to activate the charcoal. (Fresh charcoal must first be "charged" before it can function as a biotope. Uncharged charcoal can bring a provisional depletion of available nutrients when first put into the soil - until its pores fill with nutrients.) It was then added to 2 of the 10 pots and thoroughly mixed with the soil. Vermin compost was added to 2 of the 10 pots in the ratio 1: 20 (vermin compost: soil). Dry leaves were collected and added to 2 of the 10 pots one week after the sowing of the seeds ( $\frac{1}{2}$  inch on the soil). Gravel stones were collected and added to 2 of the 10 pots. Seed were planted to a depth of 1–2 cm.

Special care was taken to see that each plant received the same amount of water and nourishments, and sunlight in order to avoid any ambiguities. Every stage in the development of the plants has been closely monitored. The growth in height of the plants has been measured; no. of leaves & flowers counted, every week & all observations have been duly recorded. Photographs of each plant have also taken every week.

From the results obtained from the above experiments performed the following has been concluded. Among the different methods used to increase yield in salt affected soil, the treatment with charcoal is the 1<sup>st</sup> Best Method, treatment with dry leaf mulch is 2<sup>nd</sup> Best Method, whereas treatment with stone mulch is 3<sup>rd</sup> Best Method and finally treatment with vermin compost is 4<sup>th</sup> Best Method

## **Modern Technology Owes Ecology an Apology**

Rupali Phatak, Akriti Agarwal Nandini Sahani and Mohiika Rastogi  
*India International School, Jaipur, Rajasthan*

### **Abstract**

India is an agricultural country, where industrialization is taking place in a gradual phase in the absence of adequate supply of water in the arid areas surrounding Sanganer, Jaipur where irrigation by waste water is a welcome opportunity. Bearing this fact, the present study was conducted with an aim to assess the changes in soil as well as its accumulation in vegetable and its effect on human health.

To begin with this project we visited Sanganer region and faced petrifying results as the uneducated farmers of Sanganer irrigated their fields with the contaminated water of Amanishah nallah which is blessed with iodize of the small scale industries placed nearby.

To adhere ourselves about the contamination we collected certain soil, water and vegetable samples, to analyse its effect we got the samples tested in govt. authorized Durgapura Research Centre and the result was terrifying as the heavy metal contamination exceeded the permissible limit as acknowledged by WHO. Talking to the local doctors revealed the exact status of health in the region, we found that anemia, skin rashes and stomach infection were common and major problem in people. We tried to converse with the farmers and localities through the questionnaires prepared by us. We enacted street plays, distributed pamphlets, wrote letters to the CM, Irrigation Minister, JDA officials, had a through learning of the topic from Dr. B.L. Khandelwal (DRC) and Dr. T.I. Khan (University of Rajasthan) and we used media as an effective measure of spreading the following bioremediations:

- \* Soil Replacement
- \* Heat Treatment
- \* Phytoremediation
- \* Usage of PROM

These bioremediations serve as a short term measure only a Sewage Treatment Plant will conclude our fight against this major problem.

The environmental problems in the country are too great for the government to tackle alone and to enforce any solution to this endeavor requires the utmost involvement of people to participate in investigating restoring and maintaining the environment.

**To Find out the water Holding Capacity of Soil of Owen area and Conserve the Water by increasing water holding capacity**

*Artee Bisnoi, Vikram Singh, Mohad Azan, Dharam Chand  
and Hemant Modi  
Govt Sec. School, Rasisar, Nokha, Bikaner, Rajasthan*

**Abstract**

While Purchasing Land for Agriculture Purpose such type of sand soil should be selected whose water holding capacity is more.

To Find out a water holding capacity of soil, I have made an apparatus which cost 1 Rs only. It can be prepared by anyone at home by using a waste bottle of mineral water.

We prepare a funnel by cutting bottom of mineral water bottle. Then we plug the narrow mouth of that bottle by cloth. Now we put 500gm soil in bottle and pour 250ml water in it. Some part of water is held by soil and remaining water will be traversed through those soil columns and will be collected in beaker. Now subtractive volume of water in beaker from volume of total water. We can obtain water holding capacity of that soil.

In order to increase water holding capacity indigenous compost should be used because water holding capacity of indigenous compost is more. For this purpose we take mineral water bottle and convert them into funnels as described above. Now we put 500gm soil in first bottle, 450gm soil + 50gm indigenous compost in second bottle, 450gm soil + 50gm chemical fertilizer in third bottle and 425gm soil + 50 gm indigenous compost + 25 gm chemical fertilizer in fourth bottle then we pour 250ml water in each bottle. We find that those bottles which contain indigenous compost have water holding capacity.

By using the keep method during irrigation water conservation can be done by using the keep method irrigation can be done by 7 days by 1 liter water. In this method no water occurs because water reaches to roots directly drop by drop.

## **Comparative Study on the Effect of Burnt Motor Oil on the Soil and Rehabilitation of the Oil Contaminated Soil**

*Payel Deb, G.L. Ankita Chakraborty, Pushpita Bhowmik, ,  
Priyanka Das and Dwaita Bardhan  
Banividyapith Girls H.S School, Block: A.M.C.,  
Sub Div: Sadar, West Tripura*

### **Abstract**

Used engine oil, diesel & other such petroleum products which are washed out of the numerous garages & motor vehicle workshops ultimately reaches canals and rivers & causes water pollution. During lean season when such oil contaminated waters from large drains, canals or other water bodies are used for irrigation agricultural fields also get contaminated with such oil-wastes. In our locality dumping of oil wastes from vehicular sources into the drains and canals has become a common practice. Our present project is to study the effect of such oil waste contaminants on the physico chemical characteristics as well as fertility of the soil. To carry out the investigation soil samples were collected from the canal embankment site (Samples marked as A) & from a fertile field or garden site (marked as B). Part of the soil samples from both the sites were mixed with same volume of waste engine oil and marked as A & B respectively. Some part of A<sub>1</sub> & B<sub>1</sub> samples were mixed with sufficient water to remove oil as floating scum with the help of saw dust as adsorbent. Such restored soils were marked as A<sub>2</sub> & B<sub>2</sub> respectively. Following physico chemical characteristics of the soil were investigated with all the soil samples (A, A<sub>1</sub>, A<sub>2</sub> & B, B<sub>1</sub>, B<sub>2</sub>) – Bulk density, Porosity, Water absorption capacity, water holding capacity & PH. Fertility of the soil samples were tested on the basis of germination seeds in the said soil samples. Investigation shows that the soil samples from the embankment site has lower value for the following parameters-Bulk density, Porosity, water absorption capacity & water holding capacity compared to that of the soil samples from fertile field or garden.

Experiments with artificially contaminated soils & practically restored soil samples show that in respect of all the above mentioned parameters, there has been a decrease in the value from that of untreated samples and removal of the contaminants by water and saw dust only partially restores the value to their normal ranges.

**An Experimental Study on the Relationship between Different Physical Parameters of Soil Under Plantation and Non-plantation Areas.**

*Ninaad Das, G.L. Soumik Sarkar, Aranab Kanti Roy and Rohan Deb  
Ramakrishna Mission Vidyalaya, Block : Bishalgar,  
Sub Div : Bishalgarh, West Tripura*

**Abstract**

A simple experimental study was conducted to determine some soil parameters and to study the relationships between them in soil samples, collected from different sites that is soil under plantation crops (Tea garden, Rubber garden and not under plantations, Barren land and grass land). In the study that was conducted, soil samples from 4 different sites viz- Barren land (i.e. without any vegetation), grassland, tea garden and Rubber garden were taken in account.

Our curiosity was largely focused on two areas-primarily to see whether there exists any significant difference between the experimentally determined values of samples collected from sites under plantation crops with that for soil sample collected from sites without plantation crops. Secondly, the areas of our concern were to determine whether any relationship exists between bulk density of soil with its water holding capacity and moisture content. What we found broadly from the study conducted are (I) Although there is no large difference between the bulk density of the soils from the different sites, vegetation cover, especially well developed root systems of the plantation crops like the rubber and tea seems to reduce the bulk density of the soils. (II) Soils bearing plantation crops have greater water holding capacity than grassland or barren soil. (III) No direct relationship could be established between vegetation type and soil moisture. (IV) Most interestingly, a very clear inversely linear relationship exists between bulk density and water holding capacity. As Bulk density increases, the water holding capacity decreases as observed from the results but no such relationship either direct or inverse could be observed between Bulk Density and soil moisture.

## **Effect F Underground Living Colony Insects on Soil**

*K Yokeshwaran, S Vedha, d Deepak, R Sasidharan and K Yoganandhini  
Panchayat Union Middle School, Tamil Nadu*

### **Abstract**

Though windmills are beneficial to society by providing green energy, they also have many adverse effects on the land. Only ½ acre of land is required for the construction of 1 wind turbine 1 ½ acres is being utilized, thus leaving 1 acre fallow.

This is the major cause for the decline & activity results in shortage of food crops inflation and increased import of food. The solution lies in reclaiming the land lost to wind farms for agricultural activities. This will not only safeguard & enrich our land resources but also provide a protectable source of live hood for small scale farmers. Therefore, the above points are the driving force

From our interaction with the farmers, windmill engineers, President of Kethanur, We came to know the following information that there is : Soil erosion, Less Rain, Less Fertility, Less Productivity, Less Moisture content, Decline in Agriculture, Changing of Soil texture, Conversion of Agriculture land into fallow land. Hence after studying and analyzing all the effects of wind mill. We planned to cultivate under and near the wind mill.

The observations in first week said there was growth of coriander under roof garden and few on pith, sprouting in green gram of 1 cm growth. The comparison revealed that Maize of no growth, coriander of ½ cm, green gram of 1cm and Ladies finger of no growth. The subsequent study during second week revealed that there was growth on pith, excellent growth of green gram, Good growth under roof garden and no sprouting in ladies finger and maize. During

comparison of growth of was observed that Maize had no growth, Coriander had 2cm, Green Gram had 2cm while Ladies finger had no growth. Further, in third week it was observed that average growth on pith, good growth of maize after rain, excellent growth under roof garden and green gram and no sprouting in ladies finger as there is no sprouting we added bio-manure.

The comparative table revealed that Maize had 2cm growth, Coriander had 3 to 4cm, Green gram had 2 to 3cm, and Ladies finger still had no growth. Finally in third week it was observed the growth pattern to be Corn of 8 to 9cm, Coriander of 6 to 7cm, Green Gram of 4 to 5 cm and Ladies finger with small sprouting after adding bio manure. After fourth week there was continues growth in all plants except coriander under normal cultivation. Therefore, most of the agricultural lands are converted for commercial purposes and for wind farms. So, there is increase in price of food crops, and a situation rose for importing the food crops. To put an end for all these problems, the collective efforts by the group has suggested a valuable solution.

Since wind turbine is constructed only in small area but the entire area is left fallow, the wind farm owners therefore can give their land to small farmers for lease and can encourage the farmers to practice agriculture and can make them to earn double income.

The focus this project is to conserve the land resources with fertility and attract the attention of the Government authorities towards this issue and to take necessary steps for further action in this regard.

## **Wind Farms-Its Impact on Agriculture**

*Sananya. S, Shan Kavi M. S.M. Deepika, R Aravind Rajagopalan  
and D Parani Krishnan  
Frontline Academy Matric H.S.School, Tamil Nadu*

### **Abstract**

Tirpur is an industrial hub. Many villages in and around Tirupur were engaged in agriculture, But in recent years, there has been drastic declines in agriculture due to substantial diversion of cultivate lands commercial purposes leading to food inflation.

The statistical analysis for decline in cultivation of Lands in our region is due to Real estate, Urbanization, Wind farms, Poultry etc. We therefore concentrated on the issue of wind farms.

The project aims to prove that we can cultivate food crops under and near windmills, to convert the fallow land into agricultural land, to prevent soil erosion and to enrich land resources, to support the small scale farmers who are interested in agriculture and to motivate the farmers by making them aware that they can earn double income, Though a for construction of 1 wind turbine needs ½ Acre of land but the windmill companies consume 1 ½ acre for construction keeping 1 acre of land fallow.

The study was centered Kethanur, an Indian Village situated in Tirupuru District in Tamil Nadu. Agriculture and weaving were the main occupations of the villagers earlier. In recent years, there is a decline in agriculture due to the establishment of wind farms.

From the interaction with Mr. Manoj Agricultural officer, Pongalur, We came to know that agriculture has been declined in recent years by 25% to 45% due to wind farms.

Agriculture was practiced in 644 hectares before 5 years ago, but now it has declined to 436.45 hectares. There are totally 1,144 hectares but agriculture is practiced only in 436 hectares. Earn lump of amount for their land from from windmill owner than that of market value. Normal market value of land in Kethanur is 50, 000/- cent. Market value of when sold to windmill companies : 1-1,25,000/ Cent

As the wind blade rotates, it deviate rain bearing clouds. So the rainfall is declined from 621mm to 518mm, Lack of irrigation facilities, Labour shortage, Wrong belief and less awareness about the cultivation in wind farms

Windmill companies could lease out their land to small scale farmers to encourage them to practice agriculture. Government should take necessary steps to develop cultivation in wind farm by creating awareness and providing incentives, etc., for best yield farmers can prefer roof garden and dry farming because from our experiment the growth under roof garden were best yield farmers can prefer roof garden and dry farming because from our experiment the growth under roof garden were best.

In Kethanur about 230 Acre is left fallow due to windmill. If we cultivate there we can yield 4,60,000 Kilo Maize and 51, 750 Kilo Green Gram. In Tamil Nadu, About 10,000-15,000 Acres is left fallow due to windmill. If we practice agriculture in fallow lands imagine how much we can yield? It is beyond our imagination. Here we stretch our hands to conserve land resource will you?

## **The Analysis of materials used in making soil idols for Eco-friendly development in the area of Panki Katra**

*Gaurav Prajapati, Ashok Kumar, Aman Verma,  
Anuj Kumar Shukla and Rishi Kant  
Vidyut Parishad Inter College, Panki Kanpur, Uttar Pradesh*

### **Abstract**

The working area of our project is Panki Katra, Ratanpur, Gangaganj & Panki. There are some clay sculptors, who are engaged in the particular skill/art of clay idols making is collection & preparation of soil, heating & colouring of idols. The object of our group is making Eco-friendly idols. There will be no pollution of soil, water & air by such idols. The group consulted with clay-idols sculptors to know the source of soil to be used, its type and preparation of it, heating and colouring of idols, The traditional clay-idols change the basic form & nature of the soil when they are mixed in it after disposal. Process of heating & colouring also cause pollution.

Our group made use of unfertile soil (Alkaline/Acidic Soil). The soil for idols making is prepared by leeching process. We made the use of waste soil by this way. Instead of heating clay idols the sturdy idols are prepared by using natural fiber such as cotton, flux sunn hemp, jute, hemp, munj & coir. The natural colours (Black from Kajal, Gre-Leaves, Yellow-Turmeric & Blue-Makaoi and Mulberry are used in colouring clay idols. The group has fully informed and make skillful to clay sculptor's community and convinced them to make use of such way of making eco-friendly clay idols. The group has asked and convinced the people of this area to buy and make use of such idols through dialogue.

The specific quality of such clay-idols is being flawless and eco-friendly in compression to traditional idols. They have no harmful impact on soil, water, air living & non-living organism. The group will widely advertise and encourage to make such clay-idols with the association of district Administration, Society and Civil Communities. The unemployed youth and dropouts will be encouraged to draw and increase their income /economic level by making and selling such clay-idols. It will widely advertise the use of eco-friendly idols. The group is thankful to those persons, colleges, institutions & organizations whose assistance and co-operation of any kind promoted & proved this project a success.

**An Effective Natural Pesticide Made by Mix Gau Mutra  
(Cow Urine) with mix of Neem Cake, Alovera,  
Coconut Husk Powder & Rose Water**

*Mudit Gupta, Shramik Rawal, Umang Singh & Swapnil Mittal  
Amity Internation School Nodia, Uttar Pradesh*

**Abstract**

We have developed an innovative method by using the Gau Mutra and its mix with other natural resources and thus making an effective natural plant protector. Gau Mutra or Cow Urine has been mentioned in our Vedas also that

**Procedure:**

Take 1 kg Coconut husk powder and add to it 1 kg Neem cake. Soak overnight in a muslin cloth. In the morning squeeze the pouch and take out the extract Mix it with ½ lit. of alovera leaf juice. Add to it about 1 litre of Gau Mutra diluted with 10 litre Water. Add 250 ml of rose water. Shake well. Make a spray of about 50100 litre of the extra. Spray the Capsicum plant twice daily with it.

**Observation:**

It improves the life span of the plant and it becomes immune to microbial attack

**Conclusion:**

Gau Mutra can hence be used as an effective plant protector (pesticide) which is readily available and can revolutionize our crop production. Hence it can be a boon to our farmers as India is a strong agricultural country. It can increase the life span of our effective crops by making them immune to fungal and bacterial attack. We have distributed this innovative spray to the farmers in the Yamuna Bank Bel (Our place of research) where they worked on it and found it quite effective on their crops of potatoes, chillies and tomatoes. We are very hopeful that our research can prove to be very beneficial on a large scale. Please find attached few more experiments which we did with the Gau Mutra which have proved that it is a very effective liquid manure which is easily available in huge quantities.

## **Mini Second Green Revolution in Telepokhar, Malda**

*Bikram Paswan, Jyoti Kumari, Dharam Chand Jha,  
Chhotu Sahani and Reshmi Mishra  
Malda J.M.S Hindi High School (H.S), P.O Dist Malda, West Bengal*

### **Abstract**

#### **Introduction:**

In the mid of sixties, due to rise of population the first green revolution started to make our county self independent in crop production. From the very beginning of 21<sup>st</sup> Century productivity and fertility of soil decreased due to excessive use of chemical fertilizers, pesticides and use of underground water which had drawbacks of first green revolution. Presently our country is facing lots of problems in food production due to rapid growth of population where as cultivable lands are limited and not increasing in that ratio. Hence a second green revolution is needed in our country by resolving the drawbacks of first one, so, we have adopted a better planning for second green revolution to grow productivity and fertility of soil in the same cultivated land in our telipokhar project area by motivating few local farmers.

#### **Objectives:**

- To acquaint farmers about success and drawbacks of first green revolution
- To aware farmers about the concepts and planning of our second green revolution to increase productivity and fertility of soil by solving out drawbacks of first one
- To motivate farmers about reducing the numbers of mends/fencing and optimum use of mends to increase extra monetary income
- To grow interest regarding self preparation of organic manure (compost) land by avoiding chemical fertilizer
- To draw attention of farmers regarding selection of less irrigated crops, drip or splinter irrigation, crop rotation, mixed farming and co-operative method of farming through scientific method

#### **Methodology:**

A detailed survey in selected project area has been done among the farmer through prescribed questionnaires to get more information and data by giving priority on cultivation of crops, selection of crops, soil testing irrigation pattern, wastage of lands in mends, use of chemical & Bio-fertilizers etc.

#### **Conclusion:**

After analysis it may conclude that farmers in our project area had not adequate knowledge of scientific method of farming and are unaware about the optimum use of mends. They generally avoid soil testing, preparation of compost and invest more money for this so co-operative farming and proper implementation of new planning through sustainable methods in agriculture will help the farmers which is the demand of second green revolution.

In partnership with



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