AVISHKAR 2017

Organized by

Avishkar Cell
Dr. Babasaheb Ambedkar Marathwada University,
Aurangabad
Date: 23-25 December 2017

Avishkar-2017 team of Swami Vivekanand Senior College Mantha Dist. Jalna

His Excellency, Governor of Maharashtra, Shri. S.M. Krishna has initiated a novel research project competition named Avishkar in the year 2006. This activity, unique in its nature, is being implemented through Board of College and University Development. Dr. Babasaheb Ambedkar Marathwada University has taken special efforts to increase the participation of the talented students from rural and urban areas. Special efforts were taken to organize Regional competitions, organize, special training to these students and provide them necessary help and guidance to enhance their abilities to present their work in an effective manner. This activity has generated a lot of enthusiasm amongst students and the participation is ever increasing.

Considering this aspects University Avishkar-2017 organized by **Avishkar Cell** of Dr. Babasaheb Ambedkar Marathwada University, Aurangabad during 23-25 December 2017. Following categories were there for the Avishkar 2017.

CATEGORIES FOR PARTICIPATION

- Humanities, Languages, Fine Arts, etc.
- Commerce, Management, Law etc.
- Pure Sciences
- Agriculture and Animal Husbandry
- Engineering & Technology
- Medicine and Pharmacy

Professor Bharti Gawali was Co-ordinator and Professor Walmik Sarwade was Officer on Special Duty. Dr. Laxmikant Shinde was district Co-ordinator. Swami Vivekanand Senior College, Mantha College Co-ordinator was Dr. Rajendra B. Kakde. Online registration facility was there for the Avishkar 2017. Total five students and one college Co-ordinator registration was done in the stipulated time period.

Details of students and their topics is given in following table

Team. No.	Participant name	Topic name
1.	Ku. Gayatri Mule	Sunlight-powered 'bulbs' made from plastic bottles light up homes
	Ku. Sukanya Kulkarni	
	Ku. Dhanashri Vishrup	
2.	Ku. Pooja Vaudya	Vertical farming for sustainable agriculture
	Ku. Maya Nirwal	

Three steps were there for the participant viz.,

Step 1: Poster presentation (University level)

Step 2: Oral presentation (If shortlisted in Step 1; University level)

Step 3: State level presentation (If selected in Step 2)

Accommodation and food arrangement were made by the organizer. 23 December 2017 was the day of reporting for the Avishkar 2017 participants along with their college co-ordinator. 24 December 2017 was the day of category wise poster presentation. 25 December 2017 was the day of oral presentation for the participants who shortlisted in poster presentation.

Our team no 1 was shortlisted for the step 2. We got **Consolation prize** for our performance. Certificates were given to each participants.

Students and participants with their new invention from various regions of Marathwada were there to present. Indeed this activity has generated a lot of enthusiasm amongst our students. They are inspired to see the fair of students from village region who presented their innovative ideas confidently.

SUNLIGHT-POWERED 'BULBS' MADE FROM PLASTIC BOTTLES LIGHT UP HOMES

Ku. Gayatri Mule, Ku. Sukanya Kulkarni and Ku. Dhanashri Vishrup
Swami Vivekanand Senior College, Mantha

METHOD

- In order to make the water bottles "light up," holes are cut in the metal roofs of homes and a bottle is placed and sealed into each hole so that its lower half emerges from the ceiling.
- The clear water disperses the light in all directions through refraction, which can provide a light that is equivalent to a 55-watt electric light bulb.
- The bleach prevents mold growth so that the bulbs can last for up to five years.
- Take a clean, clear plastic, 1 liter beverage bottle by filling it with water and three tablespoons of chlorine bleach, then allow this bottle to stand in sunlight for about 4 hours.
- Secure the bottle in a hole in a metal roof to illuminate the dark interiors of thousands of homes of the India's poorest people.

PRECAUTIONS

- Good sunlight refraction and reflection depend upon a clear water medium, just as a diamond's brilliance depends on its clarity.
- Chlorine bleach plays the role of destroying the microorganisms that could proliferate inside the bottles, reducing the clarity of the water.
- As for maintenance, water and bleach must be replaced, but *only every five years*.

SIGNIFICANCE

- This type of technology will recycling solid waste, such solar bottle bulbs are a wonderfully safe, cheap, energy-efficient lighting, require very little money and does not depend on an electrical connection.
- It can meet the needs of many of the people in villages of India, where the homes receive very less electricity during the load shading or during the darkness inside the homes.

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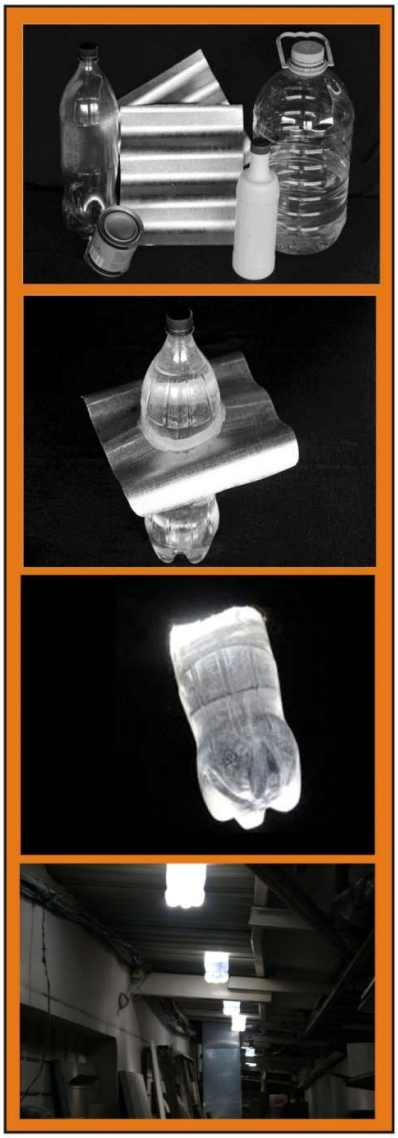

VERTICAL FARMING FOR SUSTAINABLE AGRICULTURE

Ku. Pooja Vaidya and Ku. Maya Nirwal
Swami Vivekanand Senior College, Mantha

- Green revolution in India during 1950s-1960s increased crop production to feed the every mouth of India. Quantity of food was increased but severely decreased its nutritional quality and also the soil fertility over the years.
- The soil has become addict and increasingly greater amount of chemical fertilizers are needed every year to maintain the soil fertility and food productivity.
- Frequent use of chemical fertilizer resulted into biological resistance into crop pest, reduction in population of useful microflora of soil and adverse effects on farmers and consumers health due to pesticide residue.
- It is not enough to produce sufficient food in available land to feed the civilization but also to produce a high quality of food which should be chemical free and protective to human health in a sustainable manner. But, Vertical Farming fulfill this lacuna.
- It means growing of food crops in a vertical manner of several stories building instead of traditional farming in the field. Vegetables grown in vertical farming are free from pest, wind and floods due to protected out-door green houses.
- It has a Rack-frame model which is easy to install. It significantly produces more per unit area than traditional farm. It can also customize to suit different crop requirements with specific environment.
- Proper water management is easy in vertical farming so that even a single drop of water is utilized.
- Vertical farming should be accompanied by sustainable agriculture. Sustainable agriculture means increase in farm production by the reduction of chemical fertilizers use and promotion of organic fertilizers such as biofertilizers and biopesticides.
- Sustainable agriculture include those alternative farming systems and technologies that includes natural processes, reducing the use of inputs of off-farm sources, conserving soil, water, energy and farm biodiversity.
- One of the best way of obtaining biofertilizers and biopesticieds is vermiculture technology which is emerging branch of biotechnology to solve various environmental problems from waste management to land (soil) improvement.
- Vermicompost improve physical, chemical and biological properties of soil and also improve its nutritive value for healthy plant growth. It release of nutrients, secretion of plant growth hormones, proliferation of nitrogen-fixing bacteria, increasing biological resistance in crop plants and all these worm activities contribute to improved crop productivity.
- Vermiwash is another biopesticide which have enzymes, secretions of earthworms that stimulate the growth and yield of crops and even develop resistance in crops

receiving this spray. Vermiwash is obtained by washing the soil containing earthwarm culture.

- Vermiwash also contains microflora *Azotobactor, Agrobacterium, Rhizobium* which fixes atmospheric nitrogen and phosphate solubilizing microbes.
- Therefore, main aim of this study is to promote vertical farming by using vermiculture and varmiwash for sustainable agriculture.

Benefits of Vertical farming

- Vertical farming promotes farming without agricultural land and manure.
- By applying this technique there will be the improvement in the growth, quality, yield, nutritional value and resistance to pests, diseases and other environmental stresses.
- No weather-related crop failures viz., droughts, floods, pests, etc.
- Everything is grown organically and thus no herbicides, pesticides, etc. and there are health benefits.
- It maintains soil microbiology and fertility by greater use of biofertilizers.
- No seasonal crop. All crops can be cultivated all the seasons.
- Less energy is utilized, where led lights are used instead of the sunlight for the growing of crops better than under the sunlight.
- Farming skyward would also free-up farmland for trees, which would help remove carbon dioxide from the atmosphere.
- Vertical farms would grow food near where it would be eaten, thus it save transportation cost.
- In addition to this, as compared to the land farming system, plants or crops which are grown under vertical farming are fresh, free from pesticides and it makes the healthy food.

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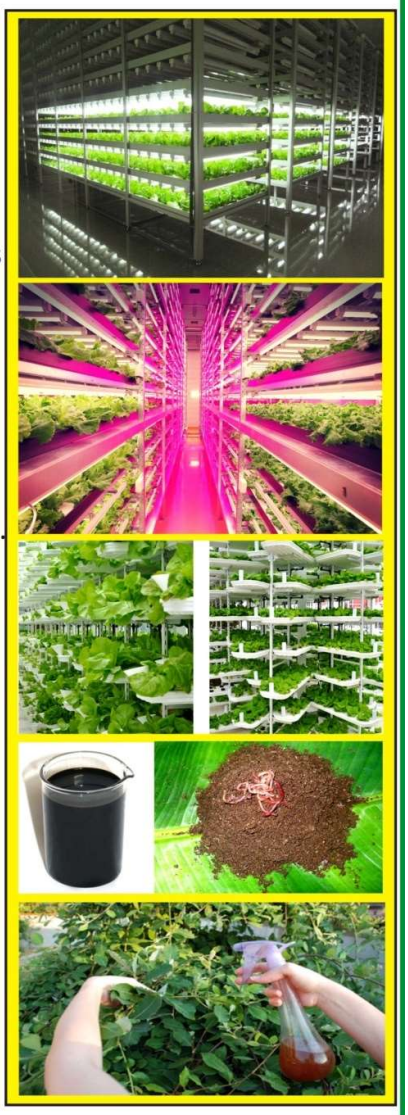
- Frequent use of chemical fertilizer resulted into biological resistance into crop pest, reduction inpopulation of useful microflora of soil and bad effects on farmers and consumers health due to pesticide residue.
- It is not enough to produce sufficient food in available land to feed the civilization but also to produce a high quality of food which should be chemical free and protective to human health in a sustainable manner.
- Therefore, aim of this study is to promote vertical farming with vermiculture and varmiwash for sustainable agriculture.
- Growing of food crops in a vertical manner of several stories building instead of traditional farming in the field.
- Vegetables grown in vertical farming are free from pest, wind and floods due to protected out-door green houses.
- It is a rack-frame model easy to install. It significantly produces more per unit area than traditional farm.
- Vertical farming should be accompanied by sustainable agriculture which include those alternative farming systems and technologies that includes natural processes, reducing the use of inputs of off-farm sources, conserving soil, water, energy and farm biodiversity.
- The best way of obtaining biofertilizers and biopesticieds is vermiculture technology.
- Use of Vermicompost and vermiwash for better crop yield.



Swami Vivekanand College students Gayatri Mule, Pooja Vaidya, Sukanya Kulkarni, Dhanashri Vishrup and Maya Nirwalat Entry gate of Avishkar 2017.

Swami Vivekanand College students with College Co-ordinator Dr. R.B. Kakde at Entry gate of Avishkar 2017.

Ku. Gayatri Mule, Ku. Sukanya Kulkarni and Ku. Dhanashri Vishrup with their poster

Ku. Pooja Vaidya and Ku. Maya Nirwal with their poster

Students with college co-ordinator Dr. R. B. Kakde

Ku. Gayatri Mule presenting her poster before referee

Ku. Gayatri Mule presenting her poster before participants


Students and co-ordinator with trophy

A snap of trophy