

## **WATER CONSERVATION AWARENESS INNOVATION AND TECHNOLOGY**

On 19/12/2023, a session was delivered to Students of Government Engineering College Valsad on "WATER CONSERVATION AWARENESS INNOVATION AND TECHNOLOGY" by Dr. K. L. Mokariya, Head of the Department, Electrical Engineering.

### **WATER IS VERY PRECIOUS**

It is only when the human life is blindly chasing after its own comforts that it is getting serious results. Man is indiscriminately using water which is the basis of human life. As a result of which the situation of water crisis is emerging. Water levels are looking down every day. It has become necessary to prevent wastage of water, which is an inexhaustible source of natural wealth. Awareness about water storage is also required.

It is not only the government's responsibility to save water. It is also of the whole society. It belongs to every single citizen of Country. Water is life. We have life in our hands but we are wasting it, misdirecting it. We have been saying there that when one is thirsty, one should not draw a well." Understanding this saying, let's try to filter the well and save water before the water is wasted. Talk about how life can be saved in the name of water through joint efforts of government and society.

### **Some interesting facts:**

- A dripping tap wastes a drop every second, which is a waste of 760 litres of water every month.
- Bathing directly under water uses 90 litres of water.
- 30 drops per minute and 46 thousand litres of water is wasted every year due to not closing the tap properly.
- Washing cars with a hose, washing vegetables with a faucet and sprinkling a garden with a hose waste more water.
- By 2025, 1.8 billion people of the world will be living in countries where water must have been completely exhausted. As per (UN Water) considering the current rate of water withdrawal in India By 2038, 60 percent of underground water reservoirs will be depleted.
- Only 35 percent of water used in industry is recycled.
- 65 percent of wastewater is discharged untreated into rivers and canals.
- 80 percent of India's waste flows into the country's rivers.

### **A Daily life habit has to be Improved**

Everyone should use water sparingly in terms of cooking food, eating dishes, washing clothes, bathing, drinking, natural needs etc. Every person and every family should use water wisely for family use, it will save ground water, lake water, house construction, cement. It is necessary for every person to be aware of the judicious use of water in public places like roads, schools, hospitals, sports grounds, public places. It is necessary to use water judiciously in industry, factories also. Very judicious use of water is also necessary in vegetation / agriculture etc. We all waste water indiscriminately. Proper and judicious use of water needs to be learned. The amount of water in the world is very limited. Pollution of water is a major problem. Saving water and using water sparingly is the imperative of the future

To cooperate with nature, maximum water should be drained into the ground and rainwater should be retained on the earth wherever it is convenient.

Water is the gift of Almighty God.  
Every teapot of water is precious.

The main four pillars of water revolution are:

1. Stop rainwater from flowing into the sea and drain it underground.

2. Proper management of groundwater storage.
3. Protecting the environment in terms of rainwater availability.
4. Using water wisely and efficiently.
5. Improve your daily habits for water conservation.

Every year we receive rain water as a gift from nature. In order to collect such rain water, the underground tanks which were used in earlier times should be constructed. Every multi-storied building should have such an arrangement that every single drop of rain water can be collected.

Some more important points

Construction of check dams

- Crops can be saved in times of scarcity of rains. Farmers can facilitate their own irrigation. Moisture should be retained in the nearby soil.
- Water from rivers flowing in vain into the sea can be stored through planning, if rainwater is drained into wells scientifically by well recharging, the wells will come back to life.
- Change irrigation system in agriculture. There is extensive wastage of water in our dhoria irrigation system. Hence water can be conserved if crops are harvested through drip irrigation using recycled water like in Israel.

All the bores in the village, the city, draining the rain water in the well, draining the water from the roof, roof, pipes, roof to the ground, making an underground water tank in every house, planning that the excess water of the tank goes down into the recharge borewell, if this experiment is done in every house, the ground water will rise to the surface. The water energy conservation principles should be explained in terms of awareness and how the new technologies of water conservation is being available to the people must be properly conveyed. We can get back the same water that can come for the welfare of all beings.

#### Rain Water harvesting

Rainwater harvesting is a low-tech method of preserving rainwater by gathering, storing, transporting, and cleaning runoff from open spaces, parks, rooftops, and other surfaces for later use. One of the best techniques used to encourage water conservation is the rainwater harvesting system. The lack of clean, high-quality water is becoming a major concern. But rainwater, which is pure and of high quality, can be used for cooking, washing, cleaning, bathing, and other livestock needs in addition to irrigation.

The parts of a rainwater harvesting system are as follows:

Catchment: A structure used to gather and hold captured precipitation.

The harvested water is moved from the catchment to the recharge zone using a conveyor system.

Flush: It's used to get rid of the initial downpour.

Filter: Used to remove pollutants and filter the rainwater collected.

The ready-to-use filtered water is kept in tanks and recharge structures. Figure A shows the process diagram of Rain Water Harvesting.



Figure 1 How to Harvest Rain Water

The factors affecting rain water harvesting is explained below.

- The amount of runoff
- Characteristics of the catchments
- effects on the natural world
- The technology's accessibility
- The storage tanks' capacity
- types, slope, and composition of the roof
- The amount, consistency, and quality of the rainfall
- How quickly and easily precipitation percolates through the subsurface to replenish groundwater.

The Advantages of Rain water harvesting are as under

- ❖ Less cost.
- ❖ Helps in reducing the water bill.
- ❖ Decreases the demand for water.
- ❖ Reduces the need for imported water.
- ❖ Promotes both water and energy conservation.
- ❖ Improves the quality and quantity of groundwater.
- ❖ Does not require a filtration system for landscape irrigation.
- ❖ This technology is relatively simple, easy to install and operate.
- ❖ It reduces soil erosion, stormwater runoff, flooding, and pollution of surface water with fertilizers, pesticides, metals and other sediments.
- ❖ It is an excellent source of water for landscape irrigation with no chemicals, dissolved salts and free from all minerals.

Some of the Limitation of rain water harvesting are as under

In addition to the great advantages, the rainwater harvesting system has a few disadvantages like unpredictable rainfall, unavailability of the proper storage system, etc.

Listed below are a few more disadvantages of the rainwater harvesting process.

- ❖ Regular maintenance is required.
- ❖ Requires some technical skills for installation.
- ❖ Limited and no rainfall can limit the supply of rainwater.
- ❖ If not installed correctly, it may attract mosquitoes and other waterborne diseases.
- ❖ One of the significant drawbacks of the rainwater harvesting system is storage limits.

Apart from this Dr K L Mokariya also explained drip irrigation, sprinkler Irrigation, Modified drip Irrigation and IOT based Irrigation system. The session begun with how much water we consumed in day to day life. What are the future predictions of scarcity of water in India as per UN and the session ended with many innovative examples and projects of water conservation and technology Implementation?



Figure 2 Soil water based pumping system

Figure 2 shows one of the Implementation of a very low cost arrangement of making water pump automatically on and off with soil moisture detection.

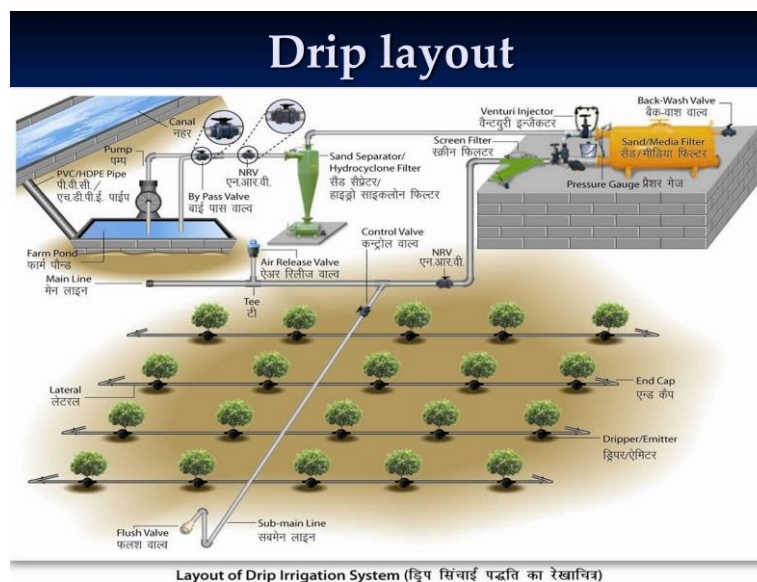


Figure 3 A Drip Irrigation Method explained during session

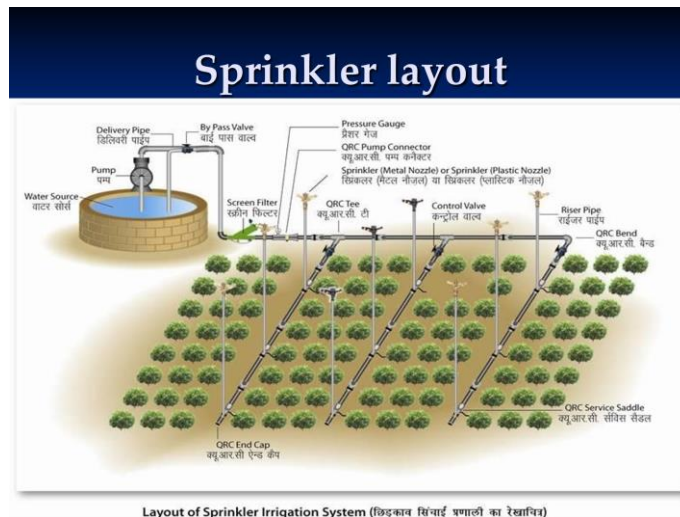


Figure 4 Layout of Sprinkler Irrigation Explained during session

Total of 53 students participated in the session from Government Engineering College Valsad. The students actively engaged in the discussion. The session concluded with a vote of thanks given by Prof. J. R. Joshi.

Photos of the session:

