Centurion
UNIVERSITY
Shaping Lives...
Empowering Communities...

SUSTAINING AQUATIC ECOSYSTEMS

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Watershed Management

Under the Watershed management, Centurion University of Technology and Management (CUTM) seeks to manage water supply, water quality, drainage, rain-water runoff, and the overall planning and utilization of watersheds. The CUTM has already taken some strategies aimed at water conservation, with much success explained below:

1. Wastewater treatment facility:

Sewage treatment plant (STP): Treated water is used in different purposes like fisheries, agricultural irrigation, lawn irrigation, and gardening.

2. Irrigation management:

Drip irrigation facilities are used for agriculture purposes under open air environments as well as low, medium and high-tech greenhouses. Beneficial reduction in water loss is also achieved through establishment of Hydroponic Unit and Sub-Surface drainage facilities for herbal gardening.

CUTM also provides courses on hydroponics.

Web Link: http://courseware.cutm.ac.in/courses/hydroponics-technician/

Watershed Management - Paralakhemundi

Sustaining aquatic ecosystems management strategies at Paralakhemundi Campus include water harvesting through the installation of percolation tanks, storage ponds and the installation of check dams as well as water conservation strategies such as drip irrigation.

Water Harvesting: Percolation Tanks

Percolation tanks are constructed to collect the surface runoff water and recharge the groundwater artificially. Percolation tanks may augment the quantity and improve the quality of groundwater. There were five percolation tanks situated inside the campus to collect the runoff generated from surface area, roads, adjacently situated mountain, experimental crop fields and roof water of all the buildings situated inside the campus.

Approximately 6900 cubic meters of water may be stored and about 4000 cubic meters of water may be recharged and contributed to groundwater storage from all the five percolation tanks. Along with this lateral flow of stored water may provide the required quantity of water to the surrounding plants. Fish farming also can be done in these stored structures.

Table: Dimensions and capacity of percolation tanks

Sl. No.	Length, m	Width, m	Depth, m	Capacity of the tank, m^3
1	30.5	18.3	3.0	1699.0
2	18.3	18.3	3.0	1019.4
3	15.2	18.3	3.0	849.5
4	30.5	18.3	3.0	1699.0
5	30.5	18.3	3.0	1699.0
			Total	**6965.0**

The annual average rainfall of the area is around 1700 mm and 80 percent of rain occurred during the monsoon (June to September). The runoff generated due to the rainfall may flow away from the campus and may erode the soil during the flow.

Loose Boulders Check Dam

Huge amount of runoff was generated from the mountain situated near the campus and it was entering the campus premises. Due to the enormous amount of runoff, few hazardous things such as soil erosion from the experimental fields, damage of campus roads, water logging in crop fields and landsliding may occur during the monsoon period. Therefore, Check dams made up of boulders were constructed in the vicinity of the campus wall. Check dams generally constructed to reduce the runoff water velocity and diverted it to percolation and/or storage tanks. Multiple check dams were constructed along the slope of the mountain. The dimension of check dams is 10 m length, 2 m wide and 2 m height. These structures reduce the slope length and provide more opportunity for runoff water to percolate into the soil and get recharged.

Storage Ponds

Storage ponds are tanks or pools designed with surplus storage capacity to collect surface runoff during monsoon period and create a facility to use it for the lean rainfall months. They consist of a permanent pond area with dugout land and embankment constructed in surroundings to provide additional storage capacity during rainfall events.

The lining of the pond may reduce the percolation loss by 60% and improve the water availability for a longer period. Pond liner is an opaque material for liquid to retain water from percolation. The storage pond was constructed with the dimension of (L:W:D 120:60:15) and having the capacity of 3000 m3 of water for reusable purposes in the campus of CUTM Paralakhemundi.

The pond was lined with 500-micron thickness of black coloured LLDPE polyfilm. The surface runoff water generated within the campus and runoff flow from the mountain near the campus were collected in the pond. The roof water from campus buildings was conveyed with the lined channels and stored in the storage pond.

The stored water may be used for various purposes such as irrigation for experimental fields and for cattle feed. The stored water also can be used for rearing and breeding of fish. Some of the commonly cultivated carp varieties such as catla (Catla catla), rohu (Labeo rohita) and mrigal (Cirrhinus cirrhosis) are cultivated in the storage ponds.

Poly-house Strategy - Drip Irrigation Systems

Low tech, medium tech and high-tech poly-house facilities are within Centurion campus for different types of vegetables, flowers as well as high value crops. The irrigation system is one of the most important components affecting the yield and quality of agricultural produce from the greenhouse farming system.

Water was provided in the proper amount and accurate time application under protected cultivation structures. Flower and vegetable crops under the greenhouse were irrigated with a drip irrigation system. With the drip irrigation systems, water and nutrients are applied directly to the crop at the root level, having positive effects on yield and water savings and increasing the irrigation performance.