

Proyecto de Desarrollo de Capacidades para el Uso Seguro de Aguas Servidas en Agricultura

(FAO, WHO, UNEP, UNU-INWEH, UNW-DPC, IWMI e ICID)

Wastewater Production, Treatment and Use in St. Kitts

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Abstract:

The annual renewable water resources in St. Kitts amounts to $1.66 \times 10^7 \text{ m}^3$ whilst the annual renewable water production amounts to $9.13 \times 10^6 \text{ m}^3$. In St. Kitts and Nevis, municipal sewage is generally stored in septic tanks sent via conduit soakaways into the ground. The wastewater production for irrigation is done at the St. Kitts Marriott Hotel who uses this water for the irrigation of its golf course. The Public Health Department follows the guidelines of the World Health Organization (WHO) for the Latin America and the wider Caribbean region for the management of the wastewater. St. Kitts agriculture is predominantly rain fed which is approximately 95% of its production and about 5% is provided with water from the municipal source.

0- Water availability and use in St. Kitts:

The annual renewable water resources in St. Kitts amounts to $1.66 \times 10^7 \text{ m}^3$ whilst the annual renewable water production amounts to $9.13 \times 10^6 \text{ m}^3$. The three main sources of water are:

- Surface supplies (springs) six main sources around the island ranging yields from 0.8 MGD to 6 599 077 m^3 per day.
- They are twenty-two wells along the coast of the island ranging in depth from 70' - 350'. The yields range from 5 499 m^3 per minute to 87 987 m^3 per minute.
- There is some desalination (private) providing water for golf courses irrigation and

potable use at the St. Kitts Marriott Hotel. The plant produces 109 984 624 m³ per day.

- Breakdown by type
 - ◆ Surface 30%
 - ◆ Groundwater 60%
 - ◆ Desalination 10%
- Breakdown by use factor
 - ◆ Domestic supply 55%
 - ◆ Commercial/Industrial 40%
 - ◆ Agriculture 5%

The Water Services Department is charged with the management of the island's water resources. The wastewater management is under the preview of the Ministry of Health.

- Water is sold to commercial/industrial consumers at rate of \$5.52 US per 4.54609 m³
- Domestic consumers water is sold using a tare system – the rate gets progressively higher for higher consumption at rate of \$3.68 US per 4.54609 m³
- Agriculture although considered commercial/industrial is charged \$4.41 US per 4.54609 m³

1- Wastewater production and treatment:

The wastewater production for irrigation is done at the St. Kitts Marriott Hotel who uses this water for the irrigation of it golf course. In 2011 the sewage plant at the St. Kitts Marriott Hotel which is manage by Royal Utilities requires 236 396. 68 m³ to irrigate it's golf course and they produce 272 765.4 m³ giving them a surplus of 36 368.72 m³ . The form of irrigation they use to irrigate their golf course is sprinkler irrigation. The water at the sewage plant at the St. Kitts Marriott is treated for its effluent before it is discharged to irrigate the golf course. The sewage plant produced 22 730.45 m³ on a monthly basis.

Because of the small population of the country, the limited number of industries and commercial activities, the treatment of commercial and domestic wastewater takes place to a limited extent. Treatment and disposal of industrial wastewater is more or less nonexistent. There is little or no anaerobic treatment of wastewater. Currently there have

been the construction of six water catchment dams to harvest the runoff of rain water, these dams has a holding capacity of approximately 4 546.09 m³.

2- Wastewater use/disposal:

The disposal of wastewater is mainly done through a collection system of the sewage from houses and commercial business places and is deposited at a designated area at the landfill. The grey water from most houses is sent directly to the ocean and the excreta are deposited into the sewage system. There are a few business places that recycle their wastewater for re-flushing of the washrooms. The industrial wastewater is put through a treatment system then is deposited to the ocean via drains. The St. Kitts Marriott Hotel uses its wastewater to irrigate the golf course and is the only source that uses the wastewater in any form of agriculture. In St. Kitts and Nevis, municipal sewage is generally stored in septic tanks sent via conduit soakaways into the ground. The water from the dams are not currently connected to a water meter to read the discharge of water that use to irrigate the crops. Most farmers are keen for knowledge on the use and disposal of wastewater as long as it is safe for consumer to consume their production without any negative implications.

3- Policies and institutional set-up for wastewater management:

The Ministry of Health is responsible for the management of the wastewater in St. Kitts who use a monitor system to check for the quality of the wastewater before it is discharge from the hotel sewage system to irrigate the golf course.

The Public Health Department follows the guidelines of the World Health Organization (WHO) for the Latin America and the wider Caribbean region for the management of the wastewater.

There is no national strategy to manage wastewater; the Ministry of Health adopts the guidelines mention earlier. They should really develop their own local strategy to deal with wastewater management.

4- Research and practice of different aspects of wastewater:

With respect to the research projects and the developing projects to date there is none to

report on this current time.

5- Status and need for the knowledge and skills on the safe use of wastewater:

The Public Health Department in collaboration with the Bureau of Standards St. Kitts has limited human resources but they try to monitor all the industrial and hotels that deal with wastewater for its quality. The technical staff of the Department of Agriculture St. Kitts has limited knowledge on the safe use and implementing the use of wastewater for the benefit of agriculture production. Training in production, treatment and management of wastewater for the sector would be a positive area for development and growth.

The knowledge of most farmers is very limited in the use of wastewater for irrigation to their crops. Their main source of irrigation not from the municipal source or rain is from water catchment dams which is not treat for any forms of pathogens. There is an urgent need for capacity building in the area of wastewater management and its safe use in the irrigation of crops.

6- Conclusion and/or important information on the subject not covered:

St. Kitts agriculture is predominantly rain fed which is approximately 95% of its production and about 5% is provided with water from the municipal source. With the closure of the sugar industry would have added pressure on land for all sectors and for the water provided by the Water Services Department. The resources to undertake such an activity is not readily available. The agriculture lands area mainly in the higher elevate lands thus getting the water to the farms is a major challenge. Water provided for agriculture production increases yields significantly and adds to the food security of the country. Most farmers when using water to irrigate crop don't irrigate they mainly water their crops. In some case where farmers has access to water for irrigation it is not recorded cause the tap into the line without permission.

References:

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