

# Water quality



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Modern farming includes use of modern methods of farming. It entails the use of chemical and other toxic inputs, which prevents plantation from pest and diseases. More often these farm inputs have an advantage to the farmer but a threat to the environment. The farms input that degrade the quality of water includes; nutrients, sedimentation, irrigation.

### Nutrients

Manures, sludge, and chemical fertilizers contain nutrients such as phosphorus, potassium, and nitrogen. Crops residue components enhance agricultural production. These farms inputs are applied just before the rain begins. On the onset of the rain, these minerals are carried downstream into aquatic ecosystems. This degrades the quality of water creating a foul taste in drinking water. It endangers the aquatic life by removing oxygen out of their habitant. Drinking water concentrated by nitrates causes methemoglobinemia (blue baby syndrome) a killer disease of infants (Antony, 2010).

### Sedimentation

Loose soils are easily transported downstream. Soil particles are often attached to other pollutants such as fertilizers, heavy metals, and pesticides. When water runoff carries the soil particles downstream it also transits these pollutants compromising the quality of water. In an area like this hit by earthquake, vegetation is likely destroyed thus leaving bare land that is subjected to erosion. Suspension of silt sediments on water threatens aquatic life since it prevents sunlight from reaching aquatic life.

## Irrigation

Unregulated water used for irrigation is hazardous for the quality of aquatic life. When much water is used for irrigation, it erodes soil fragments. The land becomes weak and prone to destruction in case of an earthquake. This causes a reduction of fertile land for farming.

To determine the extend of pollution by agricultural activities, the following measurement techniques are used. To measure the amount of nutrients absorbed by the water in the river clean jars are used to extract water from the river. The water sample is taken for a laboratory test to measure the quantity of each mineral in milligrams per 1000 milliliters water. The sediments in and on water is measured in ration of silt and other material in a liter of water. The total suspended solids on water compromises the quality of water (Antony, 2010). Other crop farming pollutants can be measured using the sample collected from the river.

Apart from clean jars the following instruments are used in sampling water quality. These include; depth finder, thermometers, ph meters, rope, clean wash bottles, plastic trash bags, rain gears, tapes for sealing containers, writing material for items one can observe, flow meters and topographical map for location (Arceivala, 1986).

To solve the problem of degrading water quality the following measures are used. Fertilizers should be applied in proper timing. Use of fertilizers when the soil has adequate water to allows nitrogen uptake thus reducing leaching. Fertilizers instructions and types should be considered to reduce the pollution rate.

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Farming methods is another mitigation measures that are used to improve the quality of water, which is initially degraded. Conservation tillage is a method used to reduce water runoff. This is where crop cultivation is done with minimal soil cultivation thus reducing the amount of nutrients carried downstream by water.

Creating buffer strips is another method that can be used to reduce the amount of nutrients in the river. They act as filter strips where dense vegetation is planted near water bodies. The roots of the plants hold soil in place reducing the velocity of the runoff preventing soil erosion. The vegetation and soils twist and filter chemicals and sediments (Veenstra et. al, 1997).

Contour farming is done by creating furrows round the valleys rather than down and up the hills which increases soil erosion due to increase the velocity of the runoff. Furrows round the hills collect water acting as semi permanent dams holding water thus prevents the soils from being eroded downstream (Arceivala, 1986).

Finally another mitigation measure that can be carried out in this place considering it has been hit by an earth quake is crop rotation and strip cropping. Planting small grins such as beans and peas creates a vegetation cover that protects the soil from erosion. Other crops such as grass act as filters that remove soil sediments and lower the water runoff rate (Veenstra et. al, 1997).

These measures will improve the quality of water in this village preventing people from water pollution related illness. The planted vegetation will help them rebuild on the destroyed vegetation (Arceivala, 1986).