

# Assessment in agriculture dominant of Southern Sri Lanka (modera river basin water shed - ma, Denipitiya)

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## **ABSTRACT**

Extend and magnitude of groundwater pollution due to fertilizer use in the permeable sandy unconfined aquifers in Polwatumodera river basin water shed- in Southern Sri Lanka was studied during January to June 2006, recognized by heavy agricultural activities. The study area is located in latitudes and longitudes of  $80^{\circ}22'$ ,  $5^{\circ}97'$ , and agriculture fields are in Welihinda, Meeruppe and Eluwawala. Sixty dug wells are selected both the well situated in cultivated and non cultivated lands. Continues monitoring was conducted with respect to Groundwater levels, Electrical conductivity (EC), Total dissolved solids (TDS). Fifteen wells were selected for total chemical analysis. . The study aimed to identify corrective and behavior of the groundwater quality changers in agricultural areas due to fertilizer, present nitrate concentration in the groundwater; present groundwater levels fluctuations and groundwater consumption of the region. Nitrate concentration had a significant appearance in cultivated and non cultivated areas. Nitrate concentration was very low in non cultivated areas and composed 0-2 mg/l. In the cultivated areas Nitrate level depended on the crop pattern and the atmospheric precipitation. During the some plant sessions Nitrate level was high and composed 16 mg/l

## **INTRODUCTION**

Groundwater is the most cost effective source of water supply in the irrigated rural areas and is exploited through the use of open dug wells or boreholes depending on the depth at which occur (Tushaar Shah-2007). Over the past few years there has been a radical evolution in agronomic practice in many areas of the Sri Lanka associated with (largely successful) attempts to increase agricultural productivity. The intensification of production from agricultural land has been sustained by the application of ever-increasing quantities of inorganic fertilizers. In the many areas, cropping frequency has been increased and additional land has been brought into production through new irrigation schemes and increasing irrigation efficiency. In this situation the bulk of replenishable groundwater resources originate as excess rainfall and excess irrigation infiltrating this land. As a consequence, these resources are vulnerable to contamination by cultivation practices. The large extent of agricultural activities makes the impact all the more significant.

of nutrient salt and pesticide leaching to with the corresponding potable water quality world health organization [WHO] drinking water. This is especially the case in areas of well-drained soils widely found in aquifer recharge areas.

In agricultural areas, nitrate pollution of groundwater can have a paradoxical effect. Nitrate pollution of groundwater has become particularly severe in places where human population and the demand for high food productivity in most concentrated (J.E. Northey).

The amount of a nitrate lead fertilizer that reaches groundwater depends on a number of factors: the amount used above ground, the geology of the region, climate of the region, and the characteristics of the fertilizer itself, such as how mobile and soluble it is in water. Aquifers that are fractured in many places, and that lie below coarse-textured and porous soils, can be very vulnerable to pollution.

High concentrations of nitrate in drinking water can be detrimental to human health. Infants under one year old are particularly at risk from excessive amount as it causes methemoglobinemia, commonly called blue baby syndrome. Because of their low gastric acidity, infant digestive systems convert nitrate to nitrite, which blocks the oxygen-carrying capacity of a baby's blood, causing suffocation and death. Nitrates have been linked to miscarriages in woman and to an increased risk of nonhodgkin's lymphoma. They have also been implicated in digestive tract cancers, although the epidemiological link is still uncertain.

Therefore, it is necessary to take up steps to drive the importance of the groundwater pollution by nitrate studies and its impact on community. It's aimed to identify corrective and behavior of the groundwater quality changers in agricultural areas due to fertilizer, present nitrate concentration in the groundwater; present groundwater levels fluctuations and groundwater consumption of the region