Hydrol Current Res 2014, 5:4
http://dx.doi.org/10.4172/2157-7587.S1.015

Conservation of fresh water bodies by biological control of the aquatic weed water hyacinth

A G Murugesan
Manonmaniam Sundaranar University, India

The proliferation of aquatic weeds, which is particularly more intense in tropical and sub-tropical countries, has created major problems in water bodies. Predominantly the floating aquatic weed water hyacinth is found in shallow waters and is rooted. In India it is estimated that this weed covers over 0.4 million ha of water surface. The thick layer formed by the matured plant over the water surface can be upto 2 meters height, it prevents the penetration of light and oxygen, affects the aquatic flora and fauna and also reduce the fish production. It sucks up the water and evaporation leading to an increased loss of water, 3.5 times higher than the plant free surface of same water body. It directly affects irrigation, hydroelectric generation and navigation. Decayed water hyacinth plants submerge at the bottom of the lakes and reservoirs and increase the silt and make the water bad tastes and odours. Water hyacinth-infested aquatic bodies are suitable places for the breeding of vector mosquitoes; hence leads to spread of vector borne diseases. The diverse habitat and the varied growth forms of water hyacinth make it difficult to find an effective approach to their control. Various methods are followed to control water hyacinth. By manual and mechanical removal technique the upper part of the plant only removed from water ways, but the root remains in the water. It re grows to nuisance density and requires more than one removal per season. Re-proliferation of weeds with in short period is also experienced. So this method has proved unsatisfactory and uneconomical. Chemical control using herbicides such as glyphosate, diaquat etc. are widely used and effective technique although it has its effect on aquatic animals and humans through herbicide contaminated water. Biological control is the best alternative method of water hyacinth control as it is eco friendly and economically feasible since the exploitation of living organisms to reduce or prevent the growth and reproduction of weeds. Biological control offers a longer term, cheaper and less resource intensive solution compared to herbicidal treatment. Potential and target specific bio-control agents like water hyacinth weevils, mites and a fish grass carp are more effective in water hyacinth control. Biological control requires time for the assessment of their impact, but once established, populations of bio-control agents remain present and in this way, the long-term cost in weed management, are less than other control measures and less harmful to the environment. The cost of control in bio-control method is comparatively very cheap. This paper explains the outcome of the biological control of water hyacinth in a irrigation tank in a river in Tamilnadu.

agmspkce@rediffmail.com

Estimation and comparison of curve numbers based on dynamic land use land cover change, observed rainfall-runoff data and land slope

Dida Aberra[1], D S Deshmukh[1], U C Chaube[2], Ambaye Ekube[1] and Melaku Tegene[1]
[1]Jimma University, Ethiopia
[2]IIT Roorkee, India

The CN represents runoff potential which is estimated using three different methods for three watersheds namely Barureva, Sher and Umar watershed located in Narmada basin. Among three watersheds, Sher watershed has gauging site for the runoff measurements. The CN computed from the observed rainfall-runoff events is termed as CN(PQ), land use and land cover (LULC) is termed as CN(LU) and the CN based on land slope is termed as SACN2. The estimated annual CN(PQ) varies from 69 to 87 over the 26 years data period with median 74 and average 75. The range of CN(PQ) from 70-79 are most significant values and these truly represent the AMC II condition for the Sher watershed. The annual CN(LU) was computed for all three watersheds using GIS and the years are 1973, 1989 and 2000. Satellite imagery of MSS, TM and ETM+ sensors are available for these years and obtained from the Global Land Cover Facility Data Center of Maryland University USA. The computed CN(LU) values show rising trend with the time and this trend is attributed to expansion of agriculture area in all watersheds. The predicted values of CN(LU) with time (year) can be used to predict runoff potential under the effect of change in LULC. Comparison of CN(LU) and CN(PQ) values shows close agreement and it also validates the classification of LULC. The estimation of slope adjusted SA-CN2 shows the significant difference over conventional CN for the hilly forest lands. For the micro watershed planning, SCS-CN method should be modified to incorporate the effect of change in land use and land cover along with effect of land slope.

dsdesh@gmail.com