

# INTEGRATED ASSESSMENT OF IMPACTS OF LAND USE CHANGES ASSOCIATED WITH BIOFUEL ON ECOHYDROLOGY AND WATER QUALITY

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## **Cooperators:**

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## **Goal:**

- To quantify the impact of biofuel crop production on ecohydrology and water quality response at various spatial and temporal scales.
- To predict the stream and lake ecosystem response in relation to biofuel crop production
- To develop a model for evaluating structural and functional response of terrestrial, lotic, and lentic ecosystems

## **Statement of Problem:**

There is growing concern for global warming among the nations and fossil fuels are the main reason for causing the effect. At the same time, there is increase in crude oil price in world market that has lead every nation to shift to alternative sources of energy to substitute the fossil fuels. Ethanol is predominant biofuel used today in countries like US, Brazil and Sweden. Corn-based ethanol constitutes about 95 percent of US ethanol feedstock US ethanol consumption has doubled from year 2002 to 2006. Consequently, there is greater pressure to increase corn production for ethanol fuelstock and therefore, there has been expansion in corn production area. As corn is a nutrient and pesticide intensive crop, the runoff from its field contaminates the streams, lakes and rivers. It also increases growth of algae which is detrimental to aquatic life. The nutrient runoff from agricultural field is also a major concern for drinking water problem to millions of people in US. Under this situation, it is required to assess the impact of enhanced corn production to its microcosm.

The primary goal of this research is to quantify the impact of biofuel crop production on ecohydrology, water quality and land-use change. We will also develop model for instream nutrient transport for biofuel crop fields using experimental data and soft computing techniques. The study will provide information regarding stream and lake ecosystem response to biofuel crop production.

## **Current Activities:**

Presently, I am working on biofuel crop production response on ecohydrology.