

Assessment of Biofuel Feedstock Production on Arkansas State Highway Transportation Department's Marginalized Lands

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Abstract : Biofuels are derived from multiple renewable bioenergy feedstocks including animal fats, wood, starchy grains, and oil seeds. Transportation agencies have considered growing the latter two on underutilized and nontraditional lands that they manage, such as in the Right of Way (ROW), abandoned weigh stations, and at maintenance yards. These crops provide the opportunity to generate revenue or supplement fuel once converted and offer a solution to increasing fuel costs and instability by creating a 'home-grown' alternative. Biofuels are non-toxic, biodegradable, and emit less Green House Gasses (GHG) than fossil fuels, therefore allowing agencies to meet sustainability goals and regulations. Furthermore, they enable land managers to achieve soil erosion and roadside aesthetic strategies. The research sought to understand if the cultivation of a biofuel feedstock within the Arkansas State Highway Transportation Department's (AHTD) managed and marginalized lands is feasible by identifying potential land areas and crops. To determine potential plots the parcel data was downloaded from Arkansas's GIS office. ArcGIS was used to query the data for all variations of the names of property owned by AHTD and a KML file was created that identifies the queried parcel data in Google Earth. Furthermore, biofuel refineries in the state were identified to optimize the harvest to transesterification process. Agricultural data was collected from federal and state agencies and universities to assess various oil seed crops suitable for conversion and suited to grow in Arkansas's climate and ROW conditions. Research data determined that soybean is the best adapted biofuel feedstock for Arkansas with camelina and canola showing possibilities as well. Agriculture is Arkansas's largest industry and soybean is grown in over half of the state's counties. Successful cultivation of a feedstock in the aforementioned areas could potentially offer significant employment opportunity for which the skilled farmers already exist. Based on compiled data, AHTD manages 21,489 acres of marginalized land. The result of the feasibility assessment offer suggestions and guidance should AHTD decide to further investigate this type of initiative.

Keywords : Arkansas highways, biofuels, renewable energy initiative, marginalized lands

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