Modeling a realistic supply chain for bio-based jet fuel

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Carinata, pictured in full bloom at a producer's field in Georgia, is a winter cover crop of interest as a feedstock for sustainable aviation fuel. Credit: Southeast Partnership for Advanced Renewables from Carinata

Oak Ridge National Laboratory scientists led the development of a supply chain model revealing the optimal places to site farms,

biorefineries, pipelines and other infrastructure for sustainable aviation fuel production.

The project focused on carinata, a hardy, oil-rich plant targeted as a winter bioenergy crop in Georgia. For their study published in *Biofuels, Bioproducts and Biorefining*, scientists used geographical data to model facilities to grow, harvest, store, process and deliver carinata-based fuel at the lowest cost and carbon intensity.

"Our model is unique in capturing the fuel's life-cycle carbon footprint," said ORNL's Kazi Ullah. "It can be used to model the supply chain for other bioenergy crops that may qualify for new sustainable aviation fuel incentives."

"If you can continue to grow bioenergy crops in the winter, you not only get more feedstock, you also get more carbon out of the atmosphere and into the soil," said ORNL's John Field. "This model takes all that into account."

More information: Kazi Masel Ullah et al, Designing a GIS-based supply chain for producing carinata-based sustainable aviation fuel in Georgia, USA, *Biofuels, Bioproducts and Biorefining* (2023). DOI: 10.1002/bbb.2483

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