Brassica Carinata and *Camelina Sativa*: Potential New Biofuel Feedstocks

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Abstract:

Growing world demand for renewable fuels and more sustainable crops has resulted in an increased interest in alternative, new oilseed crops . Cover crops such as Carinata and Camelina have a relatively short growth cycle and can be cultivated in temperate climate zones in light or medium soils. For these reasons, they are considered as promising new biofuels feedstocks.

Seeds from *Brassica Carinata* (also known as Ethiopian or Abyssinian Mustard) contain 18-28% proteins and 42-52% oil. Due to its high erucic acid content (±45% on the total fatty acids), Carnita oil is not edible and therefore an ideal biofuel feedstock *Camelina sativa* seeds contain 40 – 50% oiland 28-36% proteins. The presence of glucosinolates in the meal/press cake makes it not directly suitable for feed application.

1. Oil extraction from Brassica Carinata and Camelina Sativa is straightforward and similar to how oil is extracted from rapeseed and canola seeds. The seeds can be pre-pressed mechanically followed by a solvent extraction. This process route gives maximimum oil recovery (high oil yield and low residual oil content in the extracted meal) but it requires a higher investment than a full mechanical (solvent-free) oil recovery. This option gives a lower oil yield as the final press cake still contains ±8% residual oil.

Refining of Carinata and Camelina oil is also simalir to the refining of Canola/rapeseed oil. Pretreatment for biofuels production mainly focuses on the removal of P and metals. FFA stripping is only needed when the refined oil is intended for biodiesel, not when used for HVO production. Final color is not a quality parameter for these applications.

It can be concluded that the crushing of Brassica Carinata and Camelina Sativa seeds and the pretreatment/refining of the resulting crude oils can be done with existing industrially applied processes. Hence, it will not be technical process reasons but rather agronomical and/or economical parameters that will finally determine if these oils will really become an alternative, new biofuels feedstock.