THERMOCATALYTIC PRODUCTION OF HYDROCARBONS FROM LIPIDS OF MEAT AND BONE MEAL

World Congress on Oils and Fats

& 28th ISF Congress

27 – 30 September, Sydney, Australia

Poster Presentation

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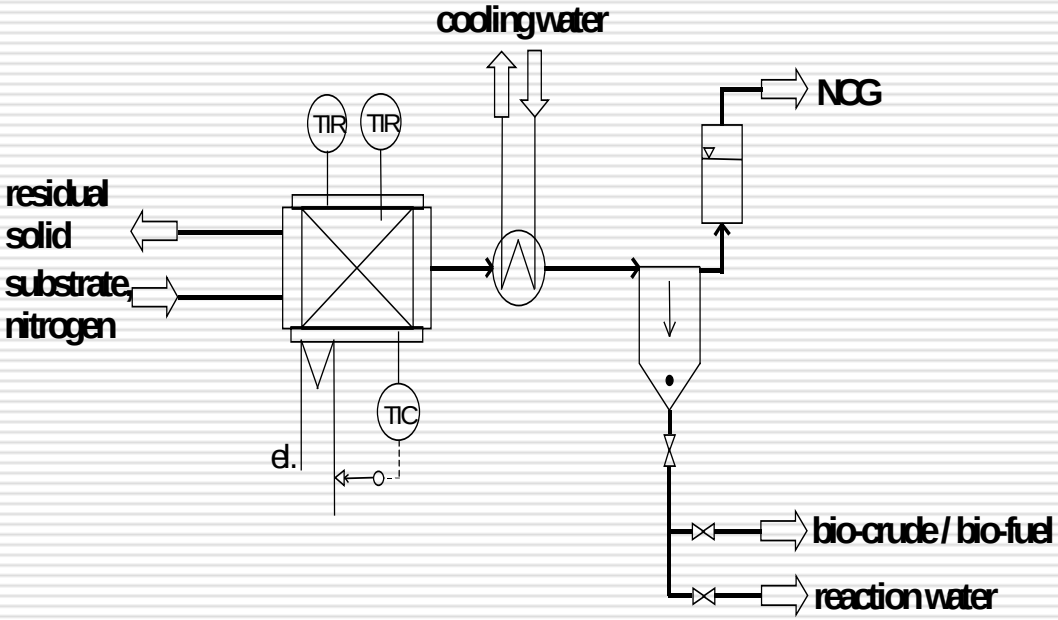
Agenda

- Objective
- LTC Reactor
- Parameters of Substrate
- Characteristics of Products
- Recycling of Phosphate from Solid LTC-Products
- Conclusions

Objective

- Looking for new markets both for animal meal (AM) as well as meat and bone meal (MBM)
- Identify low cost feedstock for biofuels driven by regional availability
- Focus on phosphorous and carbon footprint

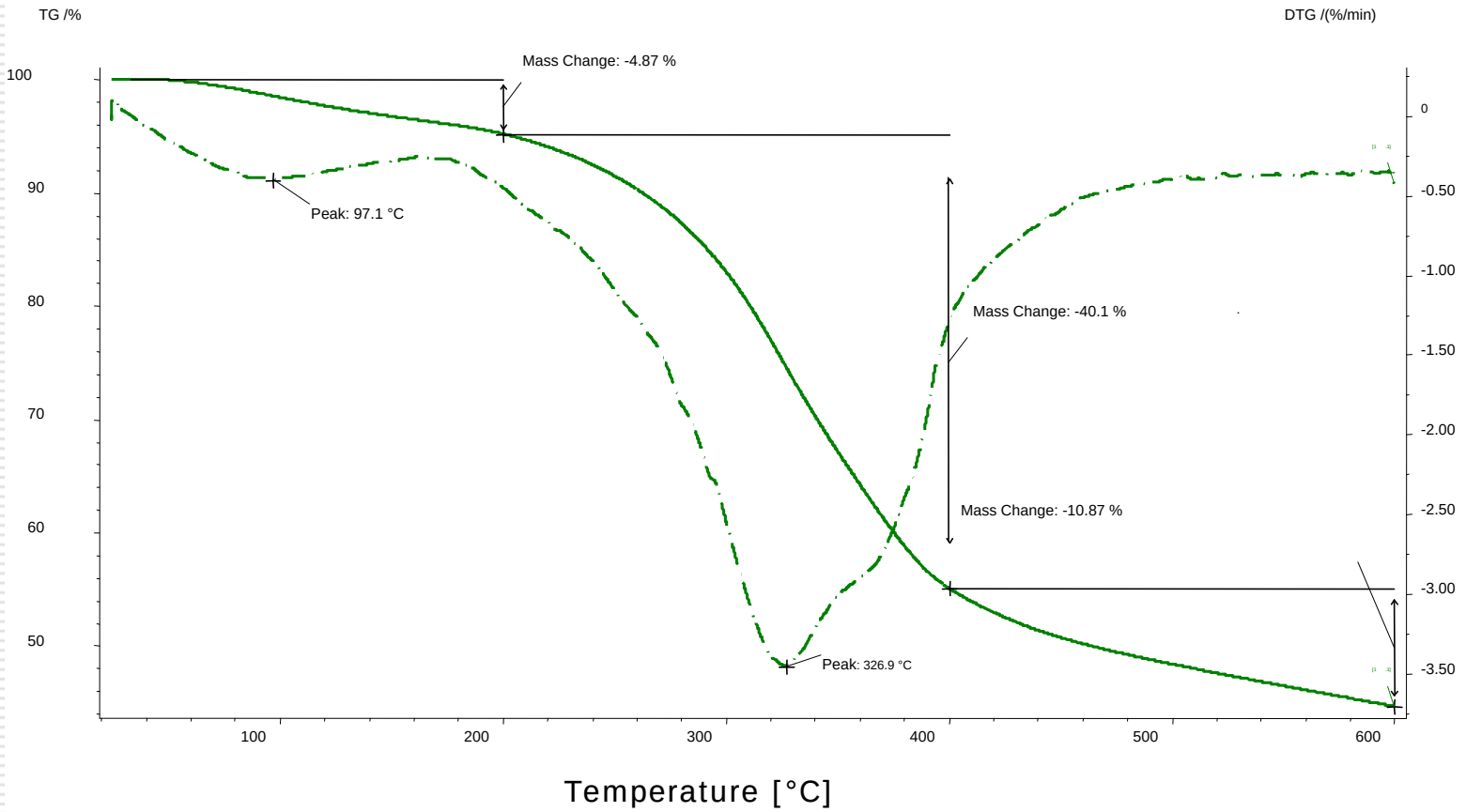
LTC REACTOR


coolingwater
NCG
TIR
TIR
residual
solid
substrate,
nitrogen
TIC
el.
bio-crude / bio-fuel
reaction water

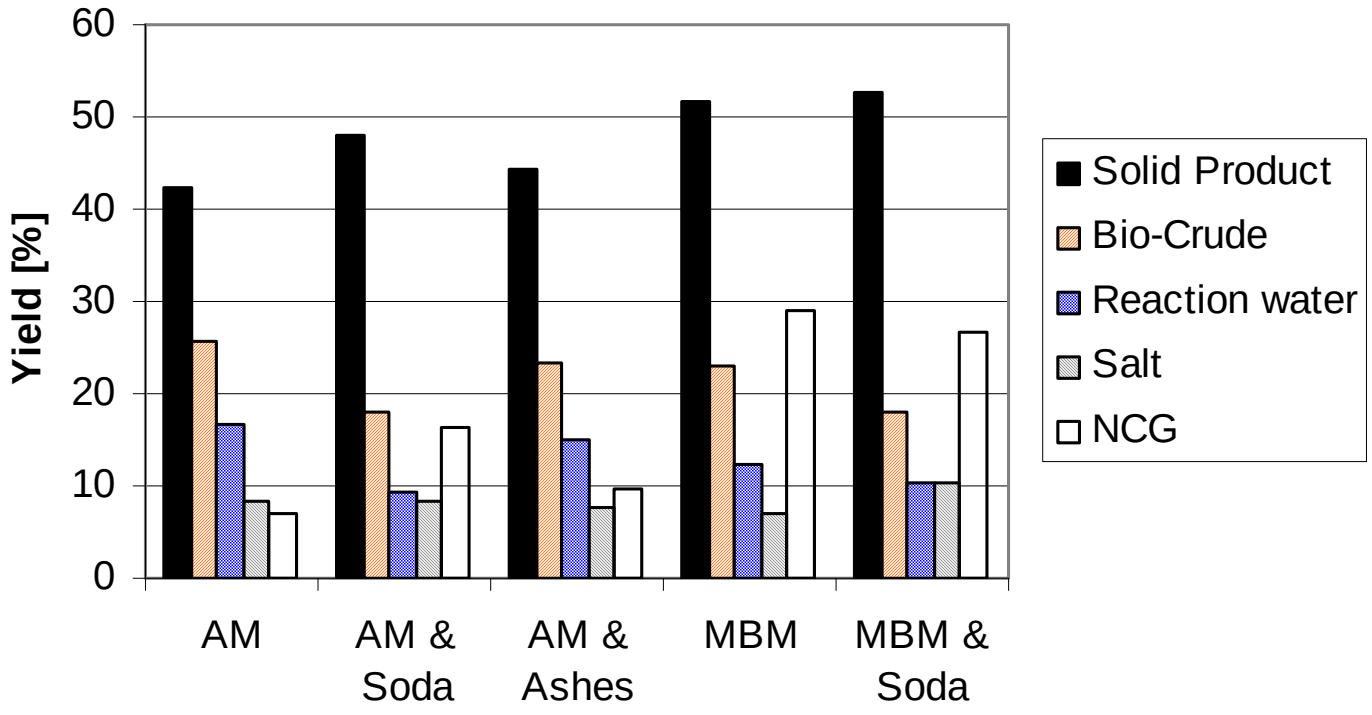
Substrate Characteristics

Parameter	AM	MBM	AF
Dry matter, TR [%]	95,7	94,6	99,4
Org. Dry matter [%]	78,7	64,9	<1
Net calor value, NCV [MJ/kg]	20,0	15,9	37,0
C [%]	46,0	35,3	76,2
H [%]	7,2	5,7	12,1
N [%]	8,7	7,6	-
S [%]	0,2	0,2	-
P [%]	2,7	5,7	-

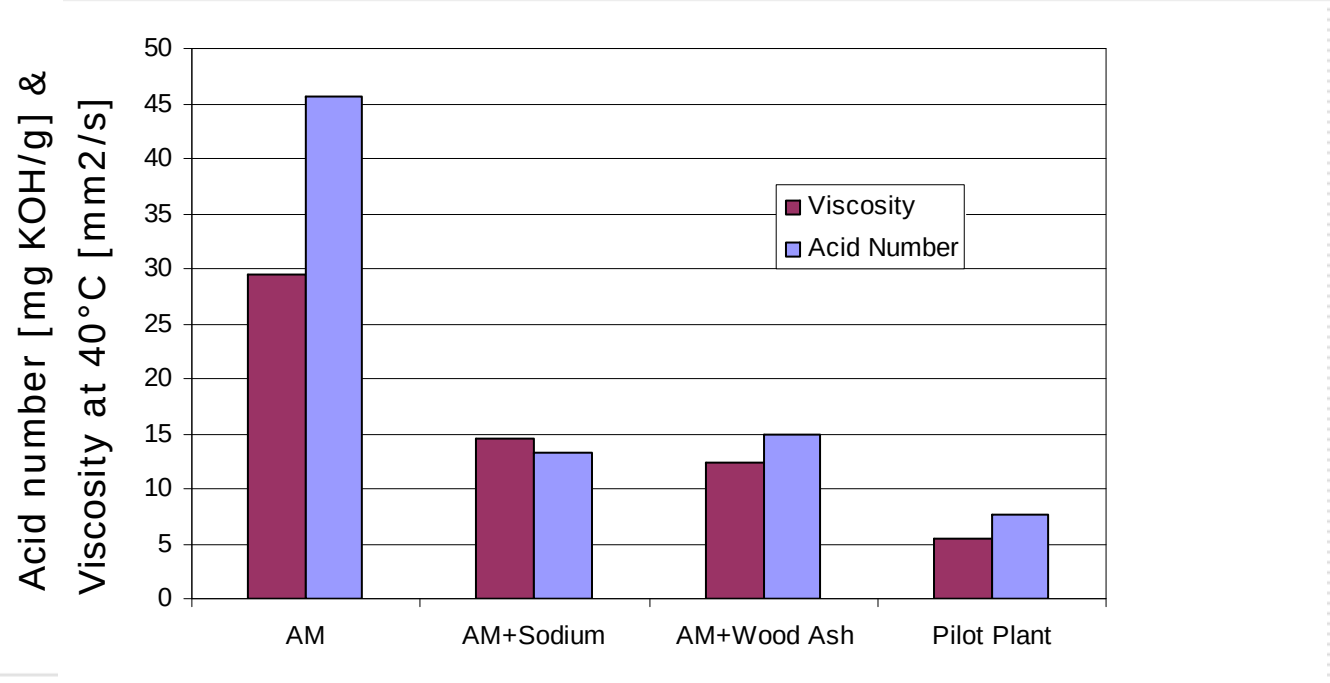
Thermogravimetric Analysis of MBM (Micro LTC)



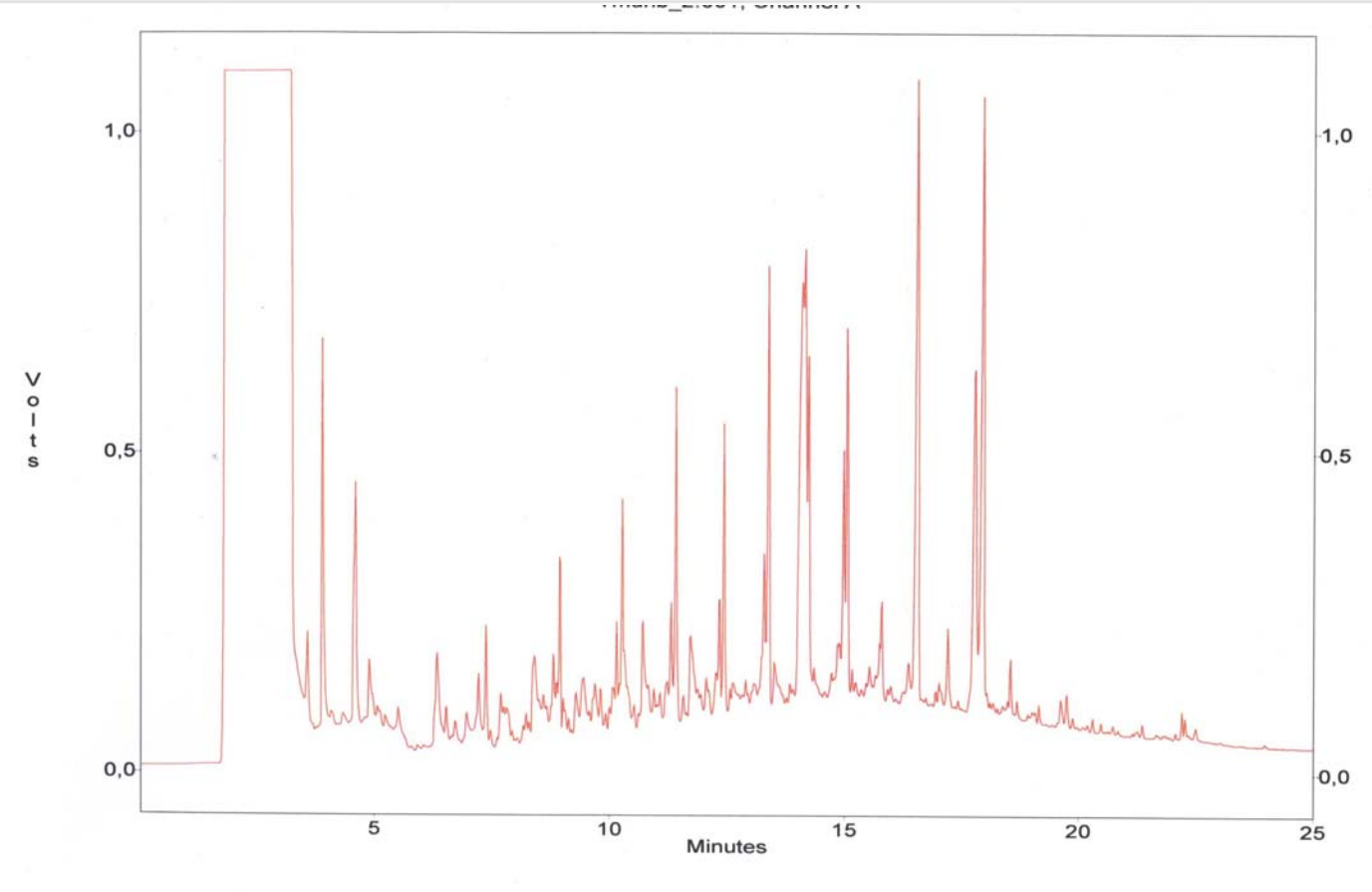
Mass Yields of Products Under Different LTC Conditions (T=400°C)



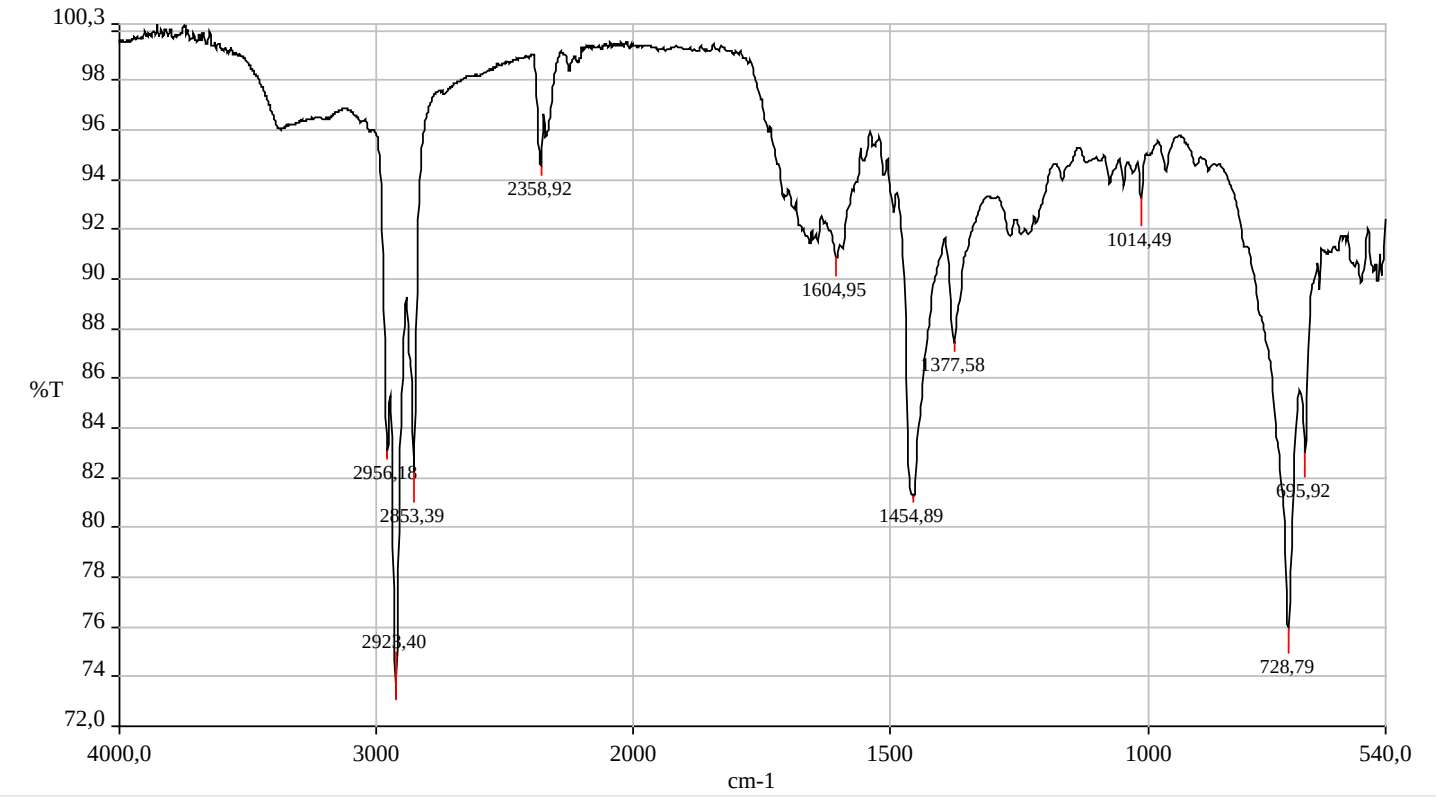
Viscosity and Acid Number of Oils from LTC of AM



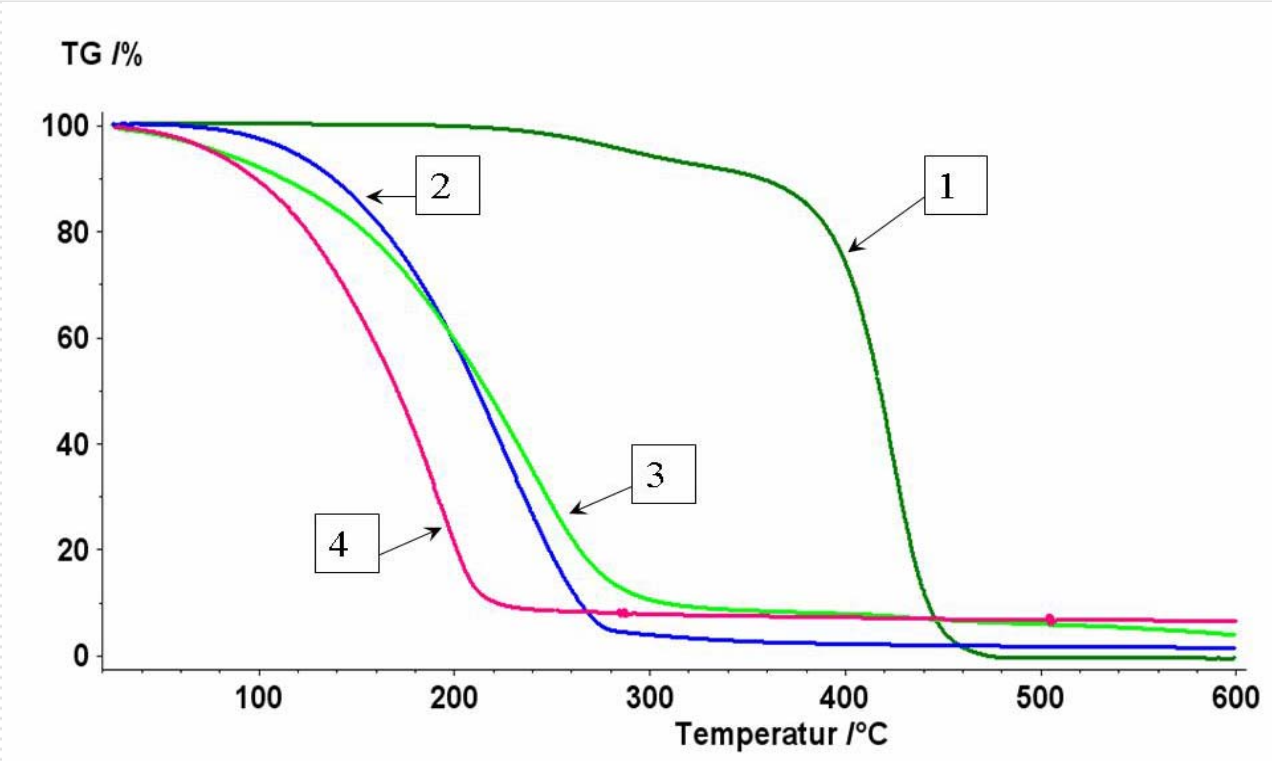
GC of Oil Produced from AM in LTC-Pilot Scale



IR of Oil Produced from AM in LTC-Pilot Scale

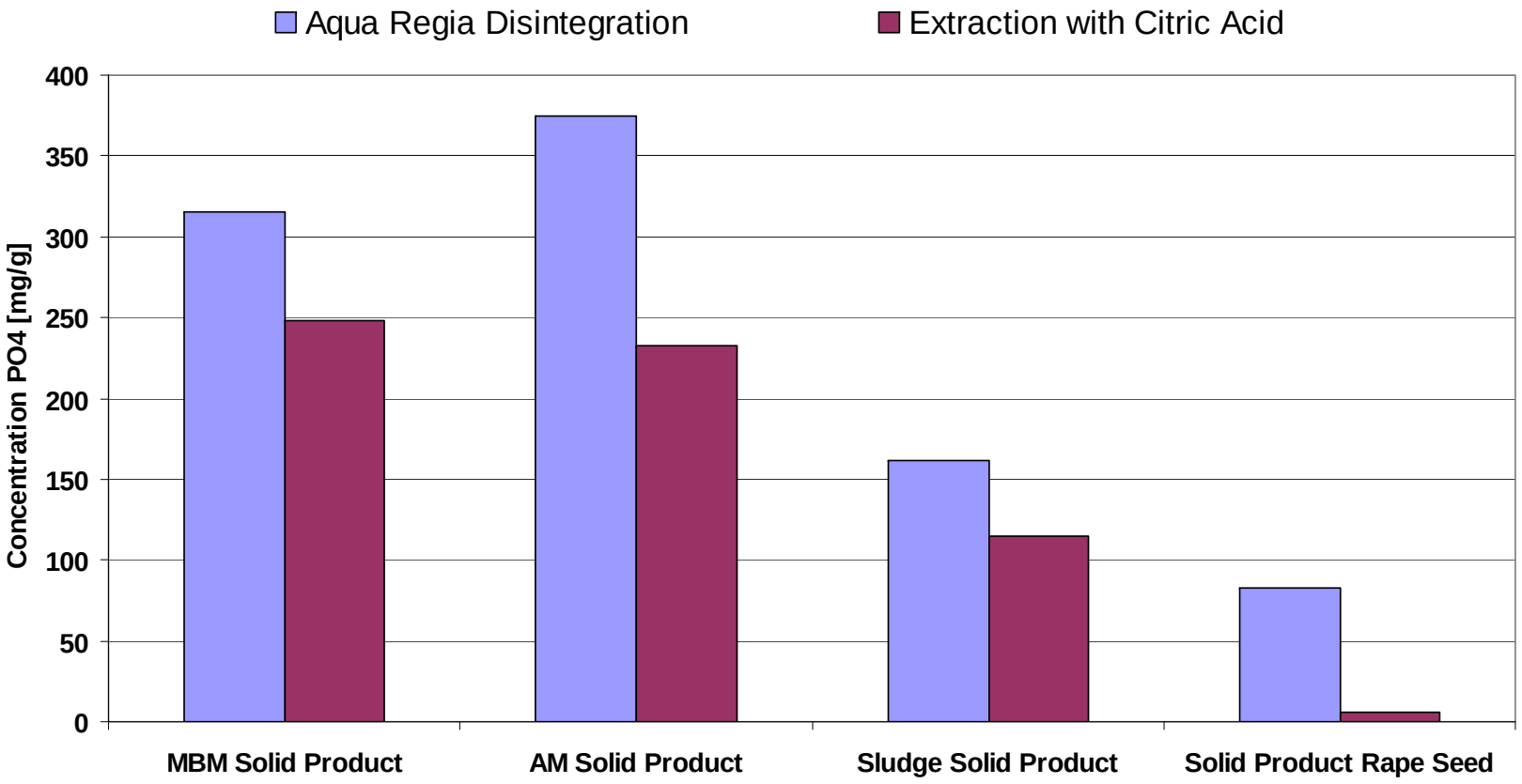


Distillation Characteristics



1-Animal Fat; 2-Diesel; 3-Hydrocarbons from LTC of MBM and Animal Fat (4-)

Recycling of Phosphate from Solid LTC-Products



Conclusion

- Use of virgin food crops for bio-fuels has severe limitations
- Other possibilities for food stocks are organic wastes
- Both Animal Meal (AM) as well as Meat and Bone Meal (MBM) are low cost substrates
- IR and NMR identify aliphatic hydrocarbons as main products in low temperature conversion of AM and MBM
- Yield of Oil increases with the amount of fat in the substrate
- Solid Product from MBM is a natural resource for phosphorous