VIDEI DRAUDZĪGA BIODEGVIELAS TEHNOLOĢIJA

THE ENVITONMENTALLY FRIENDLY TECHNOLOGY FOR BIOFUEL PRODUCTIONS

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Abstract

Biofuel production and use have been discussed this time in EC and in Latvia as alternative energy sources. The national resources allow producing liquid fuels – biodiesel and bioethanol from rape seeds and grain correspondingly. Liquid biofuels can be recommended especially for auto transport in big towns to reduce the pollution of air.

A system for environmentally friendly production of biofuel from agricultural raw materials has been developed, which permit a complex utilization of byproducts an wastes for obtaining of valuable food-stuffs and industrial products, providing the agricultural production requirements and supporting with local mineral fertilizers. Such a biofuel production includes the agricultural and industrial productions in a united biotechnological system. Production objects of system interact: the products, by-products and wastes from one object are used as raw materials, auxiliary materials or heat carriers in other system's objects. This integrated agro-industrial production system would allow the production of feeds and chemical products, along with biofuels. In this work, a model of a system for a conventional administrative rural region is presented, exemplified with the case of Latvia. The model is developed for three forms of biofuel production, i.e. ethanol, biodiesel and biogas as local energy source. Biodiesel is produced using ethanol as transesterifying agent of rape-seed oil fatty acids. This biodiesel is a blend of rape-seed oil falty acid ethyl esters (REE) and consists solely from renewable raw materials.

The capacity of distillery of system is 40 million litters per year and biodiesel 35000 ton. Important for agriculture is protein reach press cakes the byproduct from biodiesel production (66000 t/y). This byproduct can be exported as well. Biogas reactors of system can be used for utilization of wastes from town if necessary.

Recommended biosystem occupates up to 150.000 ha of agriculture lands. Friendly for environment and sustainable development of this region will be guarantied.

Conclusion

The presented system can produce followed quantities of products per year:

Fuel ethanol 21,37 milj.l, biodiesel 20016,7 t, distillery dried grain with soluble 30300 t, meat 74458,4 t, raw glicerol 3488,8 t, greenhouse vegetabls 6452,6 t, honey 3750 t, spirit beverages 27,5 milj. l, neutral ethanol 1,0 mil.l, pressed CO_2 1800 t.

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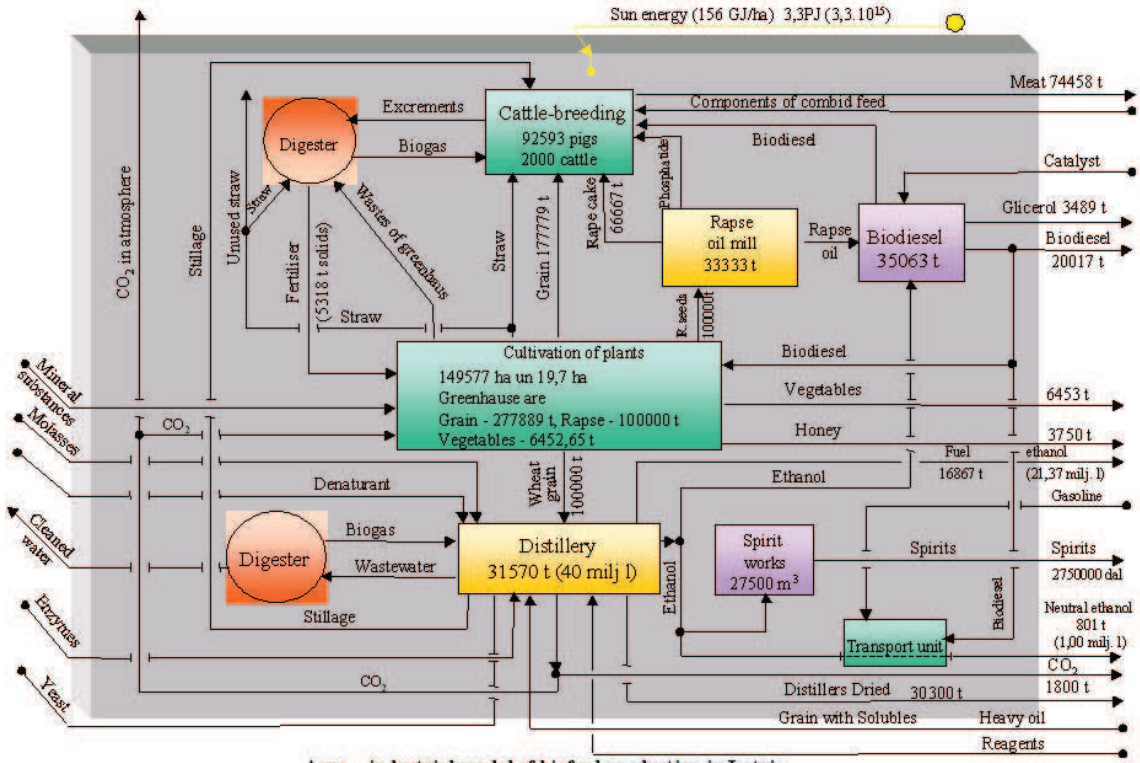

Agro – industrial model of biofuel production in Latvia
Data shows production capacity per year