

Programming Model Suitable for Economic Underlying of Specialization of Agricultural Entrepreneurs to Biomass Production

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1. Introduction

During our research project a generalization model was worked out which can optimize company specialization for biogas, bio-diesel and bio-ethanol products.

The end-product of the research was a CD ROM.

2. The main characteristics of the mode

- It is based on LP modeling technique
- The variables of the model- beyond the basic version - can be changed almost without borders, so it can be enlarged for example according to different plant species or soil types, etc.
- The balance-conditions can be built into the model according to professional and practical needs and in periodic divisions
- The technical-technological matrix can be modified The optimization calculations can be executed with the actualization of target function-coefficients

3. Suggested target-functions

- Achievable maximum profit in case tradicional utilization (human and animal feed)
- Achievable maximum profit in case of biogas production

- Achievable maximum profit in case of bio-ethanol production
- Achievable maximum profit in case of bio-diesel production

4. The process of optimization of production structure

The setup and usage of the program is similar to other Windows programs.

The optimization of the biomass model was executed by the computer-program package made for Windows operation system used at the subject called Operation research (WINQSB).

After loading the program from BIOENKRF directory we choose the model with which we would like to work: what kind of plants we want to produce, what will the target.

4.1. Composing the Input table

When the input table appears the necessary changes can be done in the model. We can change the co-efficients of the technical-technological matrix, the capacity of resources, the direction of relation at limiting conditions. A new variable can be pasted with the Edit, Insert a Variable command, a new condition can be pasted with the Edit, Insert a Constraint command.

4.2. Execution of model-calculations

Clicking at the 'Skier' icon, then clicking at OK we receive the solution. If the problem is infeasible, the problem is unbounded, we can go back to the model. With modifying the condition-system, the relations, the target-function co-efficients and the target and with appropriately edited model we can achieve the optimal solution.

4.3. Evaluation of calculation results

The model is perfectly suitable for making sensibility tests regarding the effect of factor-usage change in case of each plants. Before production decisions it is not only the production structure but the technology and standards of production as well that should be emphasized. Control-calculations obviously prove that the Biomass Production Model is very useful for the execution of decision-preparation calculations.