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Res. Agr. Eng.

Syrový O., Podpěra V.:

Simulation

mathematical model of expert system for

working processes management

Res. Agr. Eng., 55 (2009): 1-9

The elementary simulation mathematical models presented in this article are related with the sub-system Crop production of the expert system for the decision support in technological and working processes management and their optimisation. Along with this sub-system, the expert system also involves the sub-systems Livestock production and Material handling which is further divided into the parts Transport and Storage. The boundary between the individual parts of the expert system is usually a short-term or long-term material storage. The relative individual sub-systems are mutually connected through the information flow. For each of the sub-systems, specific simulation models are created. The simulation models in the expert system investigated replace the complex of general standards and norms used in other expert systems. The simulation models allow to take into consideration the concrete natural and production

conditions (area, plots shape and inclination, soil type, transport routes length and surface, fertilisers doses, crops yields etc.) and also the technological systems utilised during the realisation of operations in working processes (technical, exploitation, energy, economical or energy means, attached vehicles, machines and equipment and method of their work) and the calculation of the parameters utilised. The simulation models also allow the creation of suitable working, and transport sets to choose their optimal variants for the given conditions. In comparison with the utilised standards and norms, the parameters computed through the simulation models significantly improve the data which represent the output from the expert system.

Keywords:

expert system; simulation mathematical models; agricultural technological systems

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