TO RATIONALISE THE CVT TRANSMISSION OF THE WHEELED TRACTOR ACCORDING TO NEEDS

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Nowadays, universal wheeled tractors are mainly used in agriculture to carry out various agricultural operations: technological (ploughing, cultivating, milling with a rotary hoe, raking hay, spreading manure, baling hay, etc.) and transport (transporting heavy and liquid loads). The global trend to increase productivity and fuel economy is forcing manufacturers of wheeled agricultural equipment to implement alternative (hybrid) solutions for powering such vehicles. Dual-Flow Hydro-Mechanical Continuously Variable Transmission, which have a number of advantages and disadvantages, have become very popular for use in tractors. The control of such transmissions is automatic (i.e. certain necessary indicators are set and the control unit performs automatic control according to operational changes) or manual control of the device. The majority of scientists are in favour of the introduction of economical operating modes for tractors, which will help to optimise the indicators of power units for fuel emissions, fuel consumption, etc. However, in the course of exploitation, the farmer often has to work in the mode of maximum productivity, while economic and environmental indicators are neglected. Therefore, in the future, it will be necessary to take into account exactly two modes of operation.

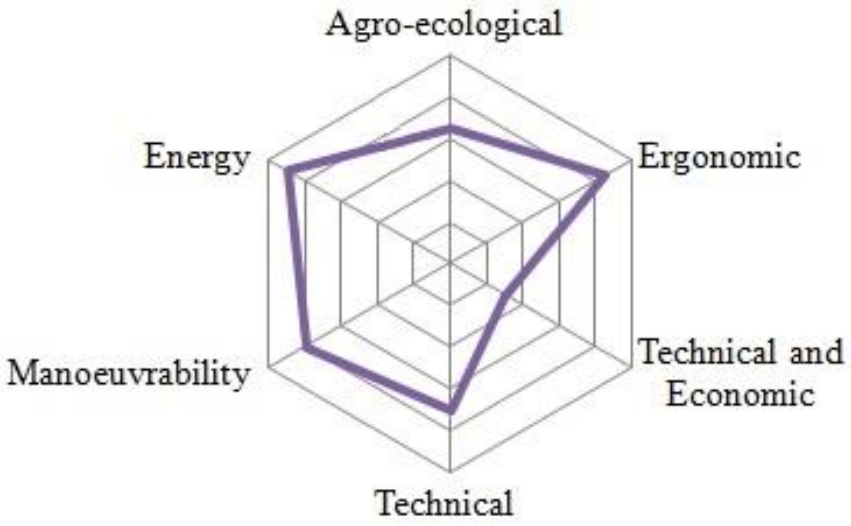

Fig. 1 – Comprehensive wheeled tractor quality indicators

In order to rationalise working methods, it is advisable to apply complex criteria to tractor operation: agro-ecological (permissible speed of movement, stability of movement, soil compaction, etc.), ergonomic (safety at work and aesthetics), technical and economic (productivity, fuel efficiency), technical (mass and dimension indicators, versatility), manoeuvrability (manoeuvrability, passability) and energy (efficiency, traction indicators). This formulation of the problem will lead to a more complex solution.