

## DEVELOPMENT OF A SELF-PROPELLED BERRIES FRUIT HARVESTER

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**Abstract:** This paper analyzes the problems related to the reconstruction of a semi-mounted berry harvester into a self-propelled one specified for exploitation on smaller orchards. The components of the self-propelled machine, their purpose and mutual functional connection are described in details, which retained the principle of unilateral picking of half the row of bush berries from its semi-mounted predecessor. Among the most important general design features, the following stand out in particular: the drive of the harvester working components, which is achieved by means of appropriate combinations of hydraulic and mechanical power transmissions, which allows it to be highly adaptable to different working conditions on the terrain, and the control device, which is designed to maintain the movement of the machine in the direction set by the driver, without decreasing the safety and passability requirements of the machine itself. In the technology of berry fruit production in the Republic of Serbia, the harvesting process is still the basic limiting factor. Manual picking participates as much as 75% in total production costs. The costs of mechanical harvesting are between 2.05 and 2.27 times lower in comparison to manual picking, depending on whether the machine is a towed or self-propelled. The paper also provides a comprehensive analysis of the energy parameters of work for both versions of the harvester. The results indicate that power losses on rolling and slipping are lower in the self-propelled version 10 and 40%, respectively, while in the semi-mounted version the power lost on the climb is 60-70% lower compared to the self-propelled version. As the harvesting process is still a limiting factor in berry fruit production, in addition to reducing costs by applying mechanized solutions, one of the goals of the work is the optimization of applied technical solutions for the same.

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