

# Automatinio vairavimo sistema traktoriui ir automatinio purkštuvo sijos sekcijų valdymo sistema

- 1. Keywords:** Automatic steering, Parallel driving, Automation of spreaders
- 2. Area:** Crop production
- 3. Subarea:** Agricultural machinery management
- 4. Theme:** The automatic steering system for tractors and the management system of automatic sprayer boom section
- 5. Year:** 2017
- 6. Summary:** PI ASU Educational Farm acquired and installed an automatic steering system and an automatic management system for the sprayer sections on the tractor. The farm operates 450 hectares of land, of which 30 hectares are cultural pastures, and the remaining area is arable land. About 90 hectares are sown with a mixture of biennial grass (clover and timothy) for the production of forage. The farm employs one agronomist, three tractor operators and one mechanical engineer.
- 7. More detailed version of the summary:** Prior the Farm purchased the equipment. It was necessary to form the precise technological tracks in the fields before fertilization or application of plant protection products. This was usually done with the help of additional temporary assistants, the guides, who measured the width of technological tracks in the field according to the working width of the sprayers on the Farm. According to the farm agronomist, the guides helped to form the distance of about 19.5 meters between the technological tracks. Meanwhile, the automatic steering system produces precise technological tracks with a distance of 20 m, which fits the working width (20 m) of the sprayers used by the Farm. Farm workers emphasize the importance of proper calibration and adjustment of the equipment and machinery; it is also very important to do the work exactly according to the parameters set by the tractor operator. When evaluating the payback of equipment according to the calculations of this methodology (excluding human resources, expensive seed savings, fuel costs, etc.), the independent crop production advisers assume that the automatic steering system and automatic sprayer boom section management system will pay off, if they are operated in the cereal fields of about 2,700-2,800 hectares. At the time of preparing this methodology (November 2019), the price of the mentioned equipment remained unchanged or even increased compared to the previous prices in 2017. It is worth mentioning that precision farming equipment is becoming more accurate, modern and functional, and it is likely that money spent to purchase this equipment will pay off more quickly. The 20 hectares field of winter wheat was selected to illustrate the analysis of the efficiency of the purchased automated systems (see the attachment Methodology). Based on this methodology, The Product Management Department of the Lithuanian Agricultural Advisory Service provides a spreadsheet for the payback of this equipment (see excel Spreadsheet for Practitioners).
- 8. Effect:** Economical, Sustainable Farming
- 9. Argumentation:** The automatic steering system allowed to save 2.04 percent (in terms of area) duplication of fertilization and spraying costs in fields, and to reduce maintenance costs of winter wheat crop by 5.6Eur, or about 2percent. The investments made it easier for the Farm to comply with environmental requirements, which contributes to sustainable farming, and it helped to facilitate and speed up the work of the tractor driver
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- 12. URL:** <https://zua.vdu.lt/>
- 13. Images:**  
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**14. YouTube:** -

**15. Documents:** [Methodology.pdf](#)  
[Spreadsheet for Practioners.xlsx](#)