

Practice Abstract

Robotics as practical support for organic production



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Reducing bottlenecks with robotics in organic production.

In 2025, an autonomous tool carrier (Agrointelli Robotti LR) was tested in organic strip farming with the aim of generating practical knowledge on how to design crop rotations and field spatial design for autonomous tools on organic farms.

Why robotics matters for organic farms

In organic farming, it is crucial to perform agrotechnical treatments on time: delayed sowing or weeding can rapidly increase the pressure of yield-limiting factors. The operation of autonomous devices allows for more frequent and well-timed operation (sowing, inter-row maintenance), reducing manual labor requirements, and improving operational logistics.

Practical recommendations

Before purchasing, determine the purpose and perform a simple cost-benefit analysis - robots are expensive, and the return on investment depends on the actual number of working hours "recovered." Choose frequent and repetitive tasks (e.g., inter-row maintenance, mechanical weeding, precision sowing). Prepare your farm: GPS-RTK module, headlands and passage corridors, and consistent row spacing for tools. Start with one crop and one treatment, then gradually scale up. „In RZD „Kępa,” we decided to implement narrow strip cropping (field widths of 12 m) to cultivate crops for local, short value chains: cereals, vegetables (multiple species), as well as legumes and flowering crops for honey production. Within these strips, additional sub-strips of 3 to 6 m width were established, where different varieties of a crop or different vegetable species were grown.