

Automated Robots in Sugar Beet Farming

Sowing and mechanical weeding robots are a subclass of field robots (autonomous agricultural vehicles working on the field). They are built and used for mechanical weed control. The robots usually travel along predefined tracks. A distinction can be made between inter-row hoeing and intra-row hoeing. Intra-row hoeing is more complex than inter-row hoeing. Camera systems with



pattern recognition algorithms can be used to distinguish between crops and weeds. However, there are also systems that sow and store the position of the seed to selectively hoe around it based on an RTK-GNSS signal (satellite positioning system with enhanced accuracy).

In recent years, weeding robots have become somewhat common in (organic) horticulture and have spread to agricultural row crop

production, both of which require high manual labor input for weed control and generate significant value. Examples include horticultural crops such as lettuce or onions or organic sugar beet cultivation in arable farming. Field robots have only been on the market for a few years. One of these commercially available robots is the Farmdroid FD20, which autonomously sows fine seeds (e.g., sugar beet, rapeseed) and then performs inter- and intra-row hoeing for weed control. A special state funding program for farmers in Bavaria to invest in field robots since 2021 has resulted in more than 60 of these field robots being used, primarily in organic sugar beet production.