BoniRob – research into field robotics

New BoniRob as a modular platform in field robotics

In the research into field robotics, AMAZONE goes one step further. After successfully completing the award-winning research project into the BoniRob field robot, there are now, based on this platform, two further research projects to work on.

In this context, the concept of the flexible field robot is to be resumed and further developed. For AMAZONE, the focus of both research projects is the development of a universal robot platform which can be put to work in the most versatile of applications (or “Apps”). In addition to the big challenge to build a practical field robot, initially a mechanical and electrical interface has to be created to allow access to most implements. In this way, the robot can be combined with different Apps, in the same way as a tractor can pull different mounted implements. And contrary to the tractor, here the Apps can completely control the behaviour of the robot to ensure that it acts as one unit.

For this interface, the project partners Bosch, Osnabrück University and Wageningen University are researching the different applications with which the robot can be combined. From the previous BoniRob project also the application of using the robot for plant phenotype work can be matched to the newly created interface.

In the research project “RemoteFarming1”, AMAZONE together with Bosch and the Osnabrück University, will work on the mechanical secondary vegetation management in biological carrot cultivation with emphasis on the system integration of BoniRob into ecological farming. For this the robot is equipped with an actuator for weed control. The target is that the robot, thanks to its complex picture processing – initially with help from man as “picture processors at the telework station” and later on also alone – will recognise the difference between the useful plants and weeds by eye. Here the field robot has to work under the influence of many disruptive factors and under variable conditions – and as such, an automatically learning picture processing system is not available on the market up to now. This project is within the framework of innovation promoted by the Federal Ministry for nutrients, agriculture and consumer protection.

Within the SmartBot research project promoted by INTERREG IV A, the part project AgroBot is investigating the basic technology needed for the development of agricultural robots. Here AMAZONE works on the robot platform and alongside project partners on applications for chemical weed control, to combat volunteer potatoes from the previous year and to measure soil compaction.

As the increasing number of these projects, the positive replies, the ideas and the many requests received for the BoniRob robot roadshow, AMAZONE with their partners are already ahead in the timetable of research into field robotics and this further demonstrates the capacity for innovation at AMAZONE.