**Will precision agriculture bring you food grown by a swarm of robots?**

*Rome, October the 12th, 2016*

Swarms of drones will help farmers to map weeds in their field, and improve crop yields. This is the promise of a research project funded by ECHORD++ (see <http://echord.eu>), called ‘SAGA: Swarm Robotics for Agricultural Applications’. SAGA will be presented at the forthcoming Maker Fair held in Rome from October 14th to 16th (<http://www.makerfairerome.eu>). The project will deliver a swarm of drones programmed to monitor a field and precisely map the presence of weeds among the crops through on-board machine vision. Additionally, drones attract each other at weed infested areas, allowing them to only inspect those areas accurately. This is similar to swarms of bees that forage the most profitable flower patches. In this way, the planning of weed control activities can be limited to high-priority areas, hence generating savings while increasing productivity.

“The application of swarm robotics to precision agriculture represents a paradigm shift with a tremendous potential impact” says Dr. Vito Trianni, SAGA project coordinator and researcher at the Institute of Cognitive Sciences and Technologies of the Italian National Research Council (ISTC-CNR). “As the price of robotics hardware lowers and the miniaturization and abilities of robots increase, we will soon be able to automate solutions at the individual plant level. This needs to be accompanied by the ability to work in large groups, so as to efficiently cover big fields and work in synergy. Swarm robotics offers solutions to such a problem”, says Dr. Trianni. Miniature machines avoid soil compaction and can act only where needed; robots can adopt mechanical solutions, as opposed to the use of chemicals, suitable for organic farming; and robot swarms can be scaled to exactly fit different farm sizes. Novel hardware, precise individual control and collective intelligence: this is the recipe proposed by the SAGA project for precision farming. In this particular case, innovative hardware solutions are provided by Avular B.V., a Dutch firm specialised in industrial level drones for monitoring and inspection. Individual control and machine vision are deployed thanks to the expertise of the Farm Technology Group at Wageningen University & Research (The Netherlands). Swarm intelligence is designed at the already mentioned ISTC-CNR, leveraging their expertise to design and analyse collective behaviours in artificial systems. For the next year, these organisations will team up to produce and field-test the first prototype for weed control based on swarm robotics research.

About SAGA

SAGA is funded by ECHORD++, a European project that wants to bring the excellence of robotics research “from lab to market”, through focused experiments in specific application domains, among which is precision agriculture (see <http://echord.eu>). SAGA is a collaborative research project that involves: the [Institute of Cognitive Sciences and Technologies (ISTC-CNR)](http://www.istc.cnr.it/) of the [Italian National Research Council (CNR)](http://www.cnr.it/), which provides expertise in swarm robotics applications and acts as the coordinator for SAGA's activities; [Wageningen University & Research (WUR)](https://www.wageningenur.nl/en/), which provides expertise in the agricultural robotics and precision farming domains; and [Avular B.V.](http://avular.com/), a company specialised in drone solutions for industrial and agricultural applications.

For more information, see <http://laral.istc.cnr.it/saga>.

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