

INTERNATIONAL PEST CONTROL



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Facilities and weed, pest
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The BPCIF announces a technological revolution in pest control

Albert Punsola*



Workshop II: New Products For Pest Control. New Molecules. Internet Of Things And Virtual Reality was moderated by Gabriele Saqui of BASF with Prof. Ramon Eritja, Lead at the Nucleic Acid Chemistry Group at IQAC, CSIC; Àngel Guerrero Research professor at the Department of Biological Chemistry and Molecular Modelling (IQAC, CSIC). And Josep Paradells Director of the i2CAT Foundation.

At the end of May, the Barcelona Pest Control Innovation Forum closed its third edition having promoted an encounter between the world of pest control and advanced technology and with a feeling that a “conversation” has begun between these two sectors that will continue in the future.

Quim Sendra, president of event organizers, the Catalan Pest Control Association (ADEPAP), said during the closing ceremony that “only the full involvement of our companies with new technological concepts can lead us into the future.” In the last edition, the event had three main sponsors (BASF, Killgerm, MYLVA) a technological sponsor (IGEOERP Cloud Platform) together with QUIMUNSA, BAYER and PESTNET.

In line with Quim Sendra’s words, Bertrand Montmoreau, president of CEPA (Confederation of European Pest Control Associations) stated that “innovation opens infinite possibilities to our business.” For two days (May 29 and 30) the pest control industry has met the most advanced technology and has been able to discern, as Quim Sendra and Bertrand Montmoreau pointed out, to what extent the business has an enormous potential for change in the next years. The president of CEPA recalled that the main mission of the sector will continue to be “to protect people, their homes and their health”.

For his part, the secretary of public health of the Government of Catalonia Health Department, Joan Guix, pointed out another conditioning factor for the future of the sector: “Globalization and climate change are favouring the presence of new species and diseases in our countries.”

Guix coincided with Montmoreau in pointing out the importance of innovation “to improve an integral control of pests increasingly necessary”.

The keys to innovation

Joaquim Vilà, professor of Strategic Management at the IESE business school in Barcelona, offered a master class on the management and development of innovation in organizations. The possibilities offered by technologies and information and communication are multiple, but they cannot materialize if there is not a well implemented culture of innovation. According to Vilà, the pest control sector must also participate in this culture. Therefore, he gave some keys to creating and managing innovation that, in his opinion, “is not limited to large companies.” In fact, he noted that “many small businesses are implementing and benefiting from it”

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Innovation must be based “on the principles and values that emerge from leadership”. The second most essential element after creating them is to sustain them over time and this is achieved with “ambition, support, trust and commitment to discipline.” Professor Vilà recalled that technology - a major player in BPCIF - was important in this context. However, following the criteria of Design Thinking, he said that the main point was “to place the problems of the users in the focus of our attention and to understand what they are saying to us”. Innovation can only advance “if there is a systematic approach that allows us to detect the latent and uncovered demands of the users”. For Vilà this requires qualities such as empathy, the ability to understand and to be open “to new ideas, although at times may seem counterintuitive.”

Smarter detection

The first workshop of the Congress, held on May 29, brought together experts in sensing, robotics, and Industry 4.0. In their presentations, they reported on the state of the art of their respective areas of expertise in relation to pest control. Ezequiel Navarro, CEO of Grupo Premo and president of Farsens, spoke about the role of the new wireless and battery-free sensors in this area that “are an alternative to the massive application of chemicals since chemicals are not sufficiently selective and have an impact in the environment”.

These devices are based on RFID (Radio Frequency Identification) technology that allows information from a chip to be read remotely without physical contact using only the existing energy in the electromagnetic spectrum. “With this we can set wherever we want a network of ubiquitous sensors, wireless, and at very low cost, that allows us for example to monitor a termite invasion in a house in real time.”

Alejandro A. Rosales, science and technology manager of IRIS, explained the contributions of industry 4.0 in this field. This new technological concept assumes that machines stop being simple repetitive instruments and “make

decisions” according to the changing parameters that they can detect. Rosales gave the example of an application in rat control that works with a sensor capable of identifying the presence of the animal and sending a small dose of vitamin D3, which is lethal to the rodent in 57 hours with 100% efficacy. In this type of processes artificial intelligence intervenes increasingly. According to the representative of IRIS, the great revolution will come from so-called stochastic models based on the processing of an enormous amount of data “that allow to know the vectors of pest spreading and to establish preventive and adaptive measures”.

Robots that watch and act

Pepa Sedó, head of the robotics and automation unit at Eurecat, defined robots as “a very useful tool in detecting and acting against pests because they are capable of working in hostile or difficult-to-access environments.” Their applications are in distinct phases of development. Some examples are: a flying device that monitors the sewers; an aquatic robot that eliminates jellyfish near the beach; hawk-shaped drones operating near airports; or a robot-cockroach that infiltrates the communities of these insects and takes the entire community from one place to another.

Another application, in this case, in agriculture is GRAPE (Ground Robot for Vineyard Monitoring and Protection). It is a semiautonomous robot dedicated to the biological control of the vineyards in a mechanical way that helps to reduce costs and the environmental impact derived from the use of pesticides. Pepa Sedó assured that “robotics evolves very quickly and will be increasingly prepared to offer concrete solutions to real problems.”

Advanced chemistry

In the second workshop, two well-differentiated aspects were discussed. The Internet of Things and Advances in Advanced Chemistry. Ramon Eritja and Ángel Guerrero, focused on the work carried out in the field of pests at the Institute of Advanced Chemistry of



Workshop I: Detection Systems and Robotics was moderated by Josep Parnau, Technical Director, Killgerm España, with Ezequiel Navarro, CEO of Premo Group and president of Farsens, Pepa Sedó, Head of Robotics and Automation Unit at Eurecat, Alejandro A. Rosales, Science and Technology Manager at IRIS (Innovació i Recerca Industrial Sostenible).



El Born congress venue, is an event & cultural space in a restored former market, that also has with excavated city ruins from 1700s on display.



Participants were invited to debate groups debate topics raised within the workshops.



Closing remarks came from (l to r) Quim Sendra SAHICASA CEO and president of ADEPAP, Joan Guix, Public Health Secretary, Health Department of the Government of Catalonia and Bertrand Montmoreau President of CEPA.

Catalonia, under the Spanish Higher Council of Scientific Research (CSIC).

Ángel Guerrero explained how the chemical communication of insects could be inhibited to control populations. The key element is the use of pheromones. These substances emitted by organisms are intended to cause a specific reaction in other organisms of the same species. In the field of pest control, pheromones can be used for different purposes: monitoring, mass capture, attraction to eliminate, and limitation of mating. The different experiments carried out in this area have yielded positive results.

Internet of things

For his part, Josep Paradells, professor at the Universitat Politècnica de Catalunya (UPC) and director of the i2CAT Foundation, spoke about how the Internet of Things (IoT) can help to prevent and control pests. The possibilities linked to the connection of millions of objects to the Net are very important. Many of these connections are designed to provide a basic information such as on / off instruction but, according to Josep Paradells, "some connections can get to work with larger and more complex

volumes of information and generate some kind of action". Some examples would be a connected refrigerator that sends a message to the user about the lack of a food or a humidity sensor on the lawn that activates the irrigation. Following this principle, a network of sensors located in strategic locations and prepared to capture a certain biological presence can have built-in actuators to kill, for example.

Paradells stated that "the network can also give notice that the necessary environmental conditions for the presence of certain pests are being given." This opens the way to preventive actions. The director of the i2CAT Foundation said that "IoT is often designed to improve products or services already existing and in others may constitute entirely new products or services." IoT has a close relationship with the technologies presented in the first workshop and in this sense the synergies offer a wide range of possibilities still to be explored.

Nanotechnology

Jordi Diaz, PhD in chemistry and coordinator of the nanomaterials characterization unit in the scientific and

technological centers of the University of Barcelona, offered a lecture on the potential of nanotechnology on the second day of the congress. Nanotechnology is the manipulation of matter at the nanoscale (one nanometre is one billionth of a meter).

Conceptually formulated in the 1950s, it has not been until the beginning of the 21st century that this discipline has begun to materialize in specific projects and achievements. One of the most important characteristics of nanotechnology is its wide range of applications since its scope extends to sectors such as energy, transport, environment, food. According to Diaz, "in fact today there are nanomaterials practically in any industrial sector". In the field of pest control, nanotechnology has not yet been applied, but the encapsulation of active ingredients, which is used in medicine to administer small doses of a drug inside the body, opens possibilities for possible encapsulation of biocides that could be used in very precise places.

Change of paradigm in the sector

The possibilities explained by the experts during the two days of the BPCIF aroused a great interest and participation by the more than 130 attendees to the congress. The public had the opportunity to discuss and ask the rapporteurs all kinds of questions. This participation shows that the sector has elevated expectations of the transformative power of the different technologies and is aware that it is faced with a change of business paradigm. Some issues, such as the true costs of adopting new technological applications, raised doubts. The speakers responded that, following the usual pattern, the costs of many technologies will decrease with their progressive entry into the market.

The value of the debate in the congress was underlined by Andy Architect, representative of the National Pest Management Association, from the US: "sharing information in the sector with meetings such as BPCIF is very relevant to drive change." The next edition of BPCIF will be in 2019.