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New Measurement Standard Will Raise Quality of GMO Testing

Many laboratories around the EU measure the content of GMO crops in different samples. The reliability of those testing results is as important for the individual citizen as it is for trade and industry. The European Commission's Joint Research Centre (JRC) works continuously to improve both reliability and comparability of laboratory testing results. The JRC has now introduced a new set of reference materials for testing maize line MON 810 genetically modified organisms (GMOs) in food and feed samples by control laboratories.

The new materials comprise the first-ever available set of certified quality assurance tools for GMO measurements expressed in a new measurement unit — as laid out in the EC recommendation 787/2004/EC in 2004. The work was carried out by the IRMM (Institute for Reference Materials and Measurements), which is part of the Joint Research Centre.

In 2004, the European Commission specified for the first time which measurement unit should be used for expressing the GMO content in food and feed products available throughout the EU. The specification proposed to express the amount of GM material in food and feed products in copy numbers, which is the number of genetically modified DNA sequences relative to the number of DNA sequences of the species. Using copy numbers to express amounts is better suited to the modern techniques for detecting GMOs and is a more convenient method than the old system of using mass fractions (mass of GM material relative to the total mass of the biological species).

A significant number of tests are carried out in the EU each year on a huge range of food and feed materials ranging from grains to manufactured products. It is necessary to clearly identify food and animal feed products that have been produced with GM ingredients and clarify their GMO content using certified reference materials. EU legislation requires labelling of food and animal feed products that contain more than 0.9% of an EU authorised GMO. The results of these tests allow consumers to choose between GM food and non-GM food.

The new set of tools contains an independent certified calibrant, certified reference material for quality control and an application note to guide the analyst. The implementation of the new measurement unit will allow improved comparability of measurement results in the food and feed chains, which is vital for international trade in GM and non-GM food and feed products. The new unit of measurement has been warmly welcomed by the more than one hundred EU control laboratories associated in the European Network of GMO Laboratories (ENGL) coordinated by the JRC Institute for Health and Consumer Protection, Ispra, Italy, which also hosts the

Community reference laboratory for GM food and feed, because it clarifies the way that GMO measurement results should be expressed.

Implementing this new system, however, requires suitable quality assurance tools, and laboratories need certified reference materials to be in accordance with lab accreditation schemes. To this end the IRMM is now preparing certification of other GM reference materials for their copy number ratios.

Background info

The JRC Institute for Reference Materials and Measurements promotes a reliable European measurement system in order to support EU policies. It was founded in 1957 as the Central Bureau for Nuclear Measurements and then renamed in 1993 to better reflect the organisation's work creating solid standards in the comparability of measurements by producing internationally accepted quality assurance tools, reference materials and measurements and carrying out training. The IRMM is now one of the world's leading reference material producers and plays an expert role in food and feed safety, bioanalysis and quality standards research. It also works with other similar research institutes, international organisations and universities worldwide.

JRC's Institute for Health and Consumer Protection operates the Community reference laboratory for GM food and feed that validates the analytical methods for GM detection in the EU and chairs the European Network of GMO Laboratories.

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