

# Writing the Book on Agricultural Analysis

**Silvio Vaz Junior, Senior Scientist, Analytical & Environmental Chemistry, Embrapa, recently published a book: Analysis of Chemical Residues in Agriculture. Here, he talks us through key trends in the field – and offers advice for those considering life as an author.**

James Strachan | 09/30/2021 | Interview

## What inspired you to write the book?

Books have always fascinated me since childhood – so it's a privilege to be able to publish one! Regarding the topic, it is exciting to write about analytical chemistry applied to agriculture – it's such an important activity for humanity.

## Why is chemical residue analysis in agriculture such an important topic?

Agriculture remains one of the strategic sectors for the global economy and it is integral to its well-being. But it's also seen as a source of environmental and health concerns – mainly because of the widespread use of agrochemicals (for example, pesticides and fertilizers) and veterinary drugs, which are used to not only treat illness but also promote livestock productivity. Unfortunately, agrochemicals generate residues, which are present in crops, fruits, meats, and processed products (food and feed), which need permanent monitoring and control. The measure of chemical residues in agriculture and livestock is paramount. And so analytical chemistry contributes to the generation of wealth and health for modern society.

The use of advanced analytical techniques can generate reliable information about the quality of products and raw materials. Furthermore, the current demand for more sustainable food production systems has promoted the development of policies aimed at reducing the negative impacts on the environment and overall health, as

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## **How do regulatory requirements differ across the world? What challenge does this pose for analytical scientists?**

According to the World Health Organization, there are more than 1000 pesticides used around the world to ensure food is not damaged or destroyed by pests – and each pesticide and agrochemical has differing properties and toxicological effects. International policy efforts are essential to ensure the quality and security of agricultural systems – across the whole chain, from crops to food – their products and their sustainability. especially for commodities.

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food and the environment, highly qualified professionals and advanced analytical instrumentation are essential. Unfortunately, not all countries can fulfil these requirements.

### **What recent analytical developments have you noticed? And which techniques are most important today?**

Regarding recent developments, paper-based sensors using microfluidic (*lab on paper*) have brought the promise of cheap, simple, and accessible devices for quick, easy, and in-field detection of contaminants and pollutants. In a general way, several probes and sensors (spectroscopic and electrochemical) are under development to make the life of the analytical chemist easier. Moreover, the green analytical chemistry approach can be applied to make methods more sustainable.

Regarding which techniques are most important today, LC and GC-based techniques are the most used for organic residues (for example, pesticides in food and the environment), whereas absorption and emission spectrometry are most common for inorganic residues (for example, toxic metals in the environment).

### **What were the main challenges you faced in writing the book? And what advice would you give to someone who is thinking of writing a book of this scope?**

The main challenge was to prepare a text dedicated to two very complex branches – agricultural matrices and environmental matrices. Certainly, it took a lot of time. So my advice? Be sure you want to go down that road; it is long and challenging! But also, at least in my experience, the return is worth it.

You can purchase "Analysis of Chemical Residues in Agriculture" [↗ here](#)

## Reference



### About the Author

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Over the course of my Biomedical Sciences degree it dawned on me that my goal of becoming a scientist didn't quite mesh with my lack of affinity for lab work. Thinking on my decision to pursue biology rather than English at age 15 – despite an aptitude for the latter – I realized that science writing was a way to combine what I loved with what I was good at.

From there I set out to gather as much freelancing experience as I could, spending 2 years developing scientific content for International Innovation, before completing an MSc in Science Communication. After gaining invaluable experience in supporting the communications efforts of CERN and IN-PART, I joined Texere – where I am focused on producing consistently engaging, cutting-edge and innovative content for our specialist audiences around the world.

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