Monitoring of Pesticide Residues in Food in Jordan

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JFDA

JFDA

- Established in 2003.

- More than 800 employee.

- Competent authority for food safety (Processed food).
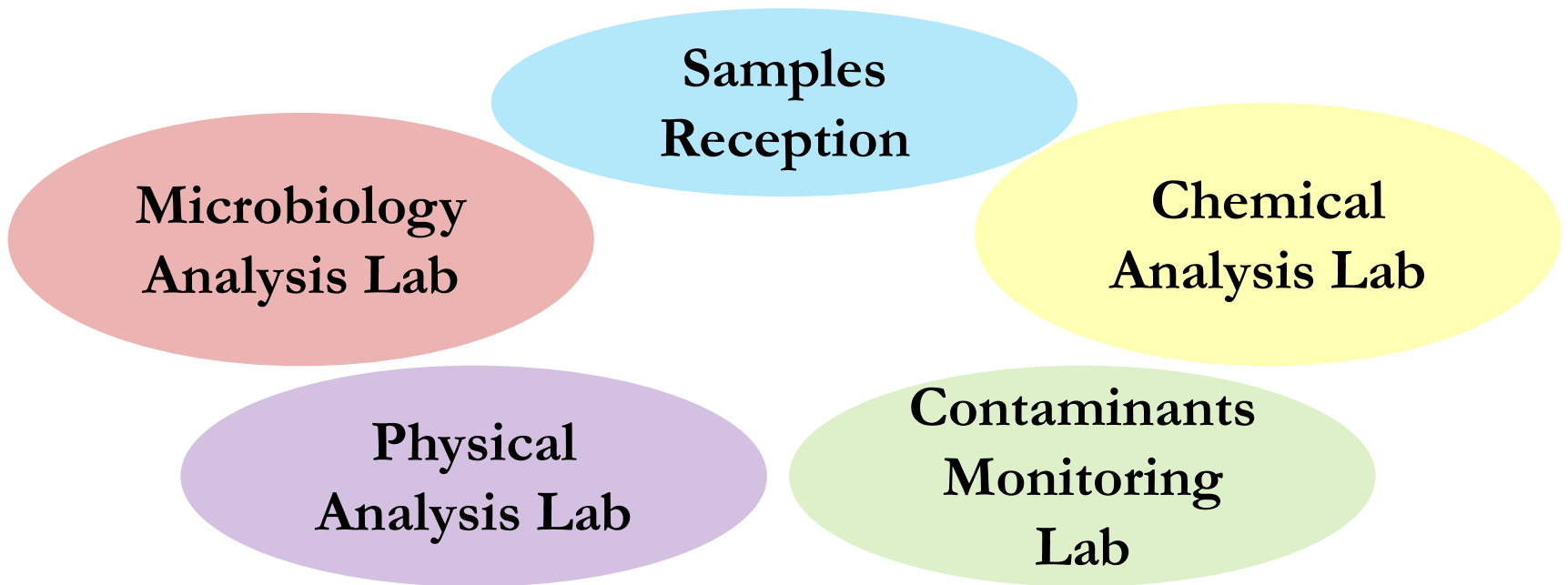
- Under food law No. 30/2015.

Mission: Ensure safety/quality/efficacy of food, drugs and related medical supplies

Vision: Well-recognized institute in the field of food & drug monitoring

Food Lab

- More than 70000 samples annually & increasing

- Accredited against ISO/IEC 17025:2017

Samples Reception

Microbiology Analysis Lab

Chemical Analysis Lab

Physical Analysis Lab
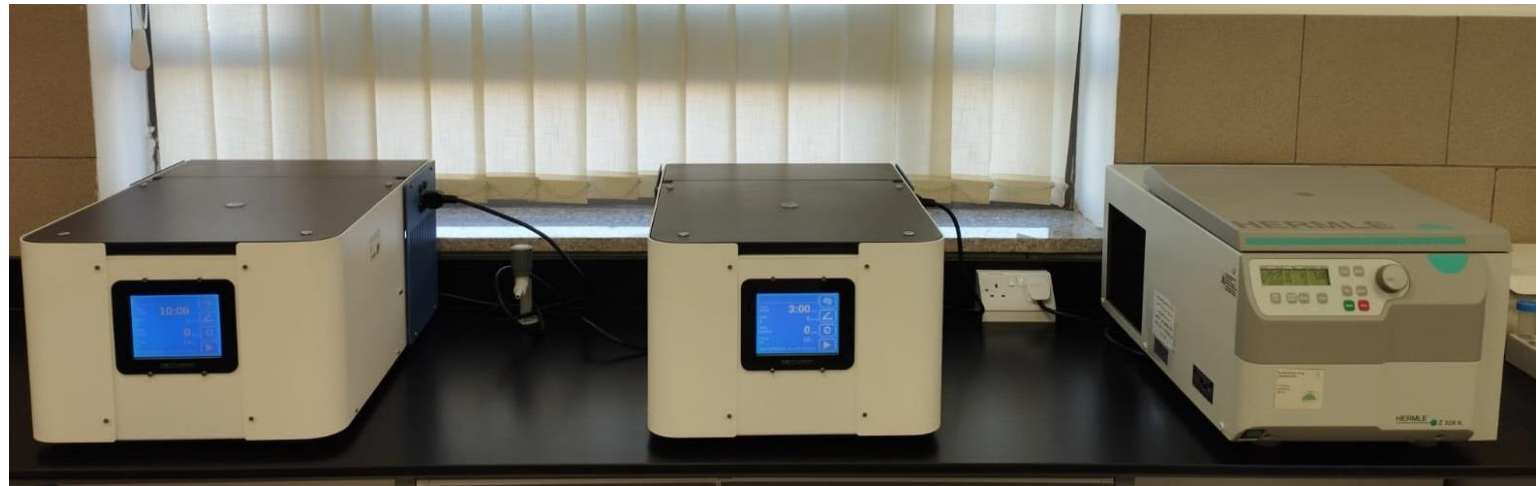
Contaminants Monitoring Lab

Contaminants Monitoring Division (CMD)

- Vision started in mid 2017.

- A well-equipped lab responsible for contaminants monitoring in food. (Residues)

- Advanced techniques and instruments.

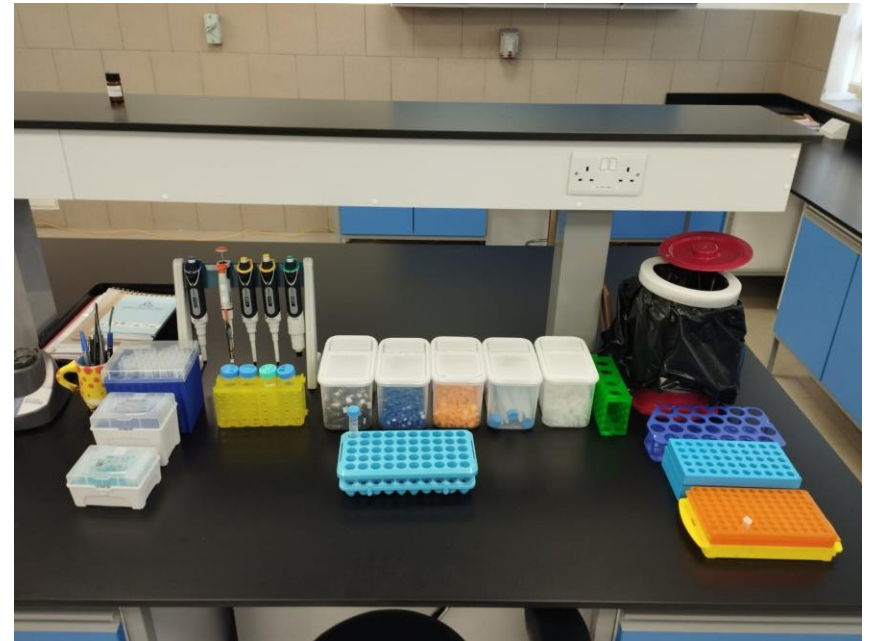- Qualified well trained staff.

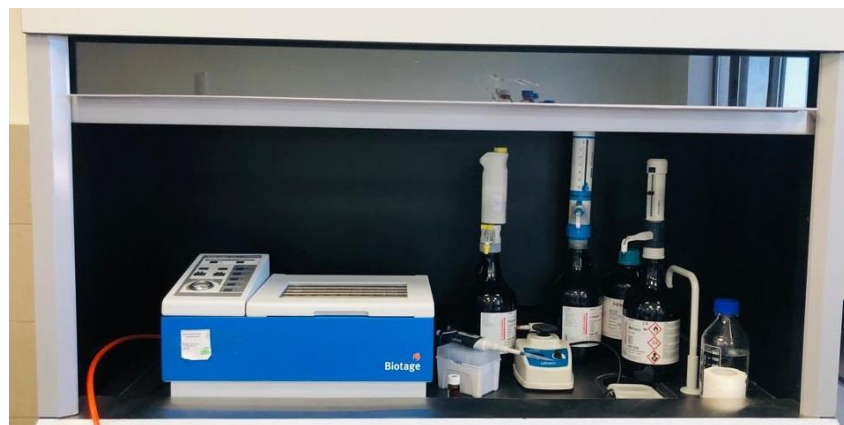# CMD

CMD

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CMD

Pesticides Residues Methods

- Accredited (ISO/IEC 17025:2017) for pesticides residues detection in 4 food commodities using LC-MSMS & GC-MSMS.

- 6 SOPs covering:

  - **High water (FV).**
  - **High acid (Lemons).**
  - **High oil, low water (Oils).**
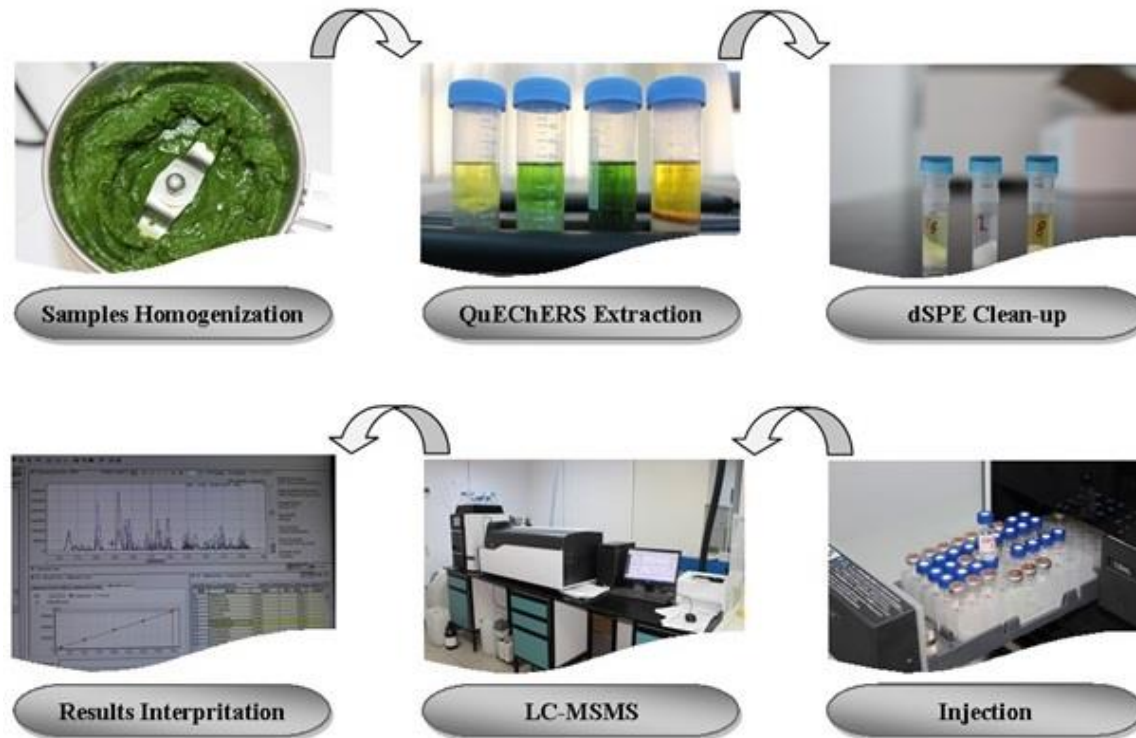 - **High starch, low water (Cereals).**

  Accredited

  - High sugar (Honey, Dates).
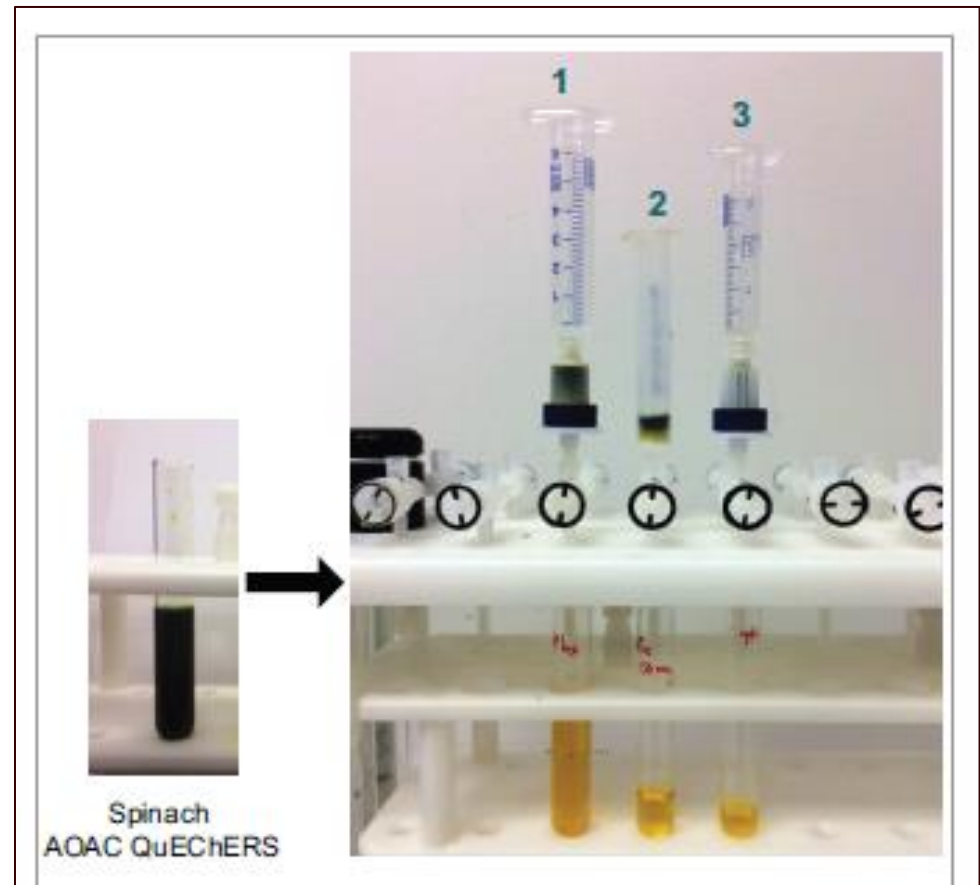 - High oil, intermediate water (Olives, Avocado).

  Valid

Pesticides Residues Methods

- 350 pesticides (LC & GC combined).
- QuEChERS (EN version).

Samples Homogenization — QuEChERS Extraction — dSPE Clean-up — Results Interpritation — LC-MSMS — Injection

Pesticides Residues Methods

- New cleanup technique will be introduced shortly.

- Simple pass through.

- Removes pigments & phospholipids.
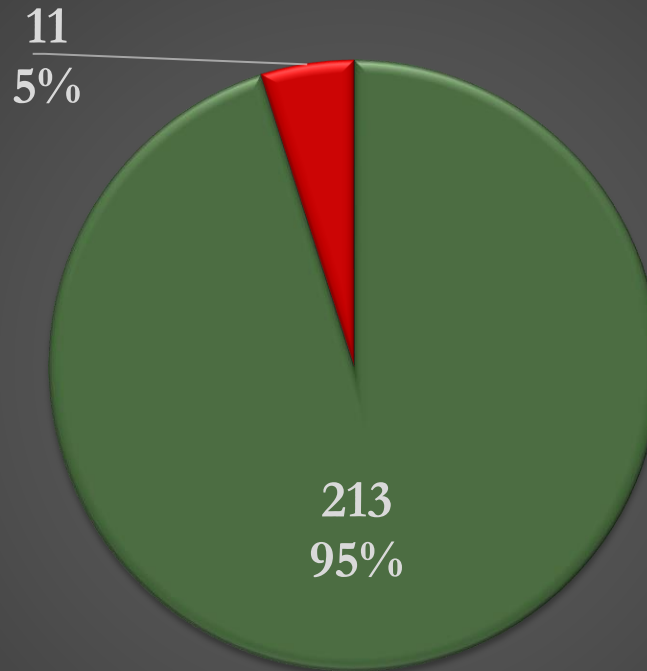

Spinach
AOAC QuEChERS

Pesticides Residues Work

- Routine work: Fruits & vegetables, cereals, pulses, dates, and raisins.

- Around 3000 sample annually.

- Next: Coffee beans & tea.

Pesticides Residues Results

Fruits & Vegetables (1st third 2024)
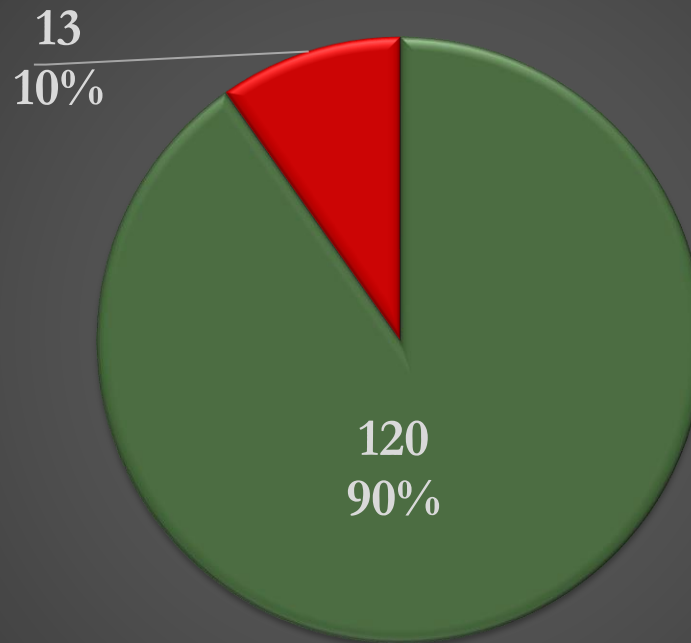
11
5%

213
95%

■ Compliant samples   ■ Non compliant samples

Pesticides Residues Results

Pulses (1ˢᵗ third 2024)
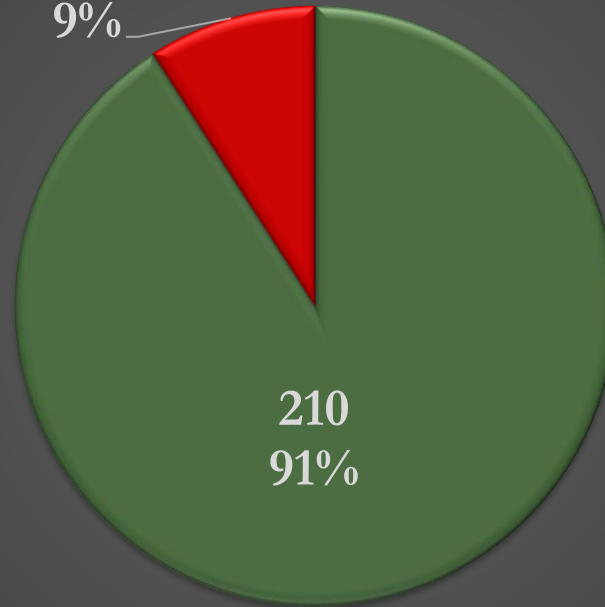
13
10%

120
90%

■ Compliant samples ■ Non compliant samples

Pesticides Residues Results

Dates (1ˢᵗ third 2024)
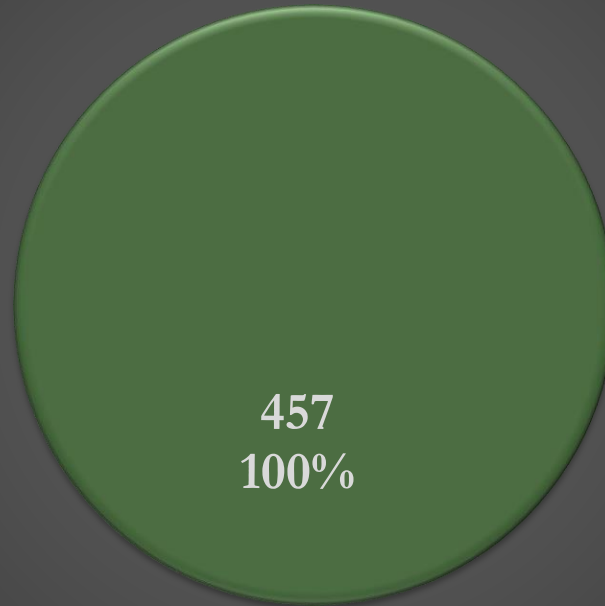
21
9%

210
91%

■ Compliant samples   ■ Non compliant samples

Pesticides Residues Results

Cereals (1ˢᵗ third 2024)

457
100%

Compliant samples

Pesticides Residues Results

Raisins (1st third 2024)

6
33%

12
67%

■ Compliant samples   ■ Non compliant samples
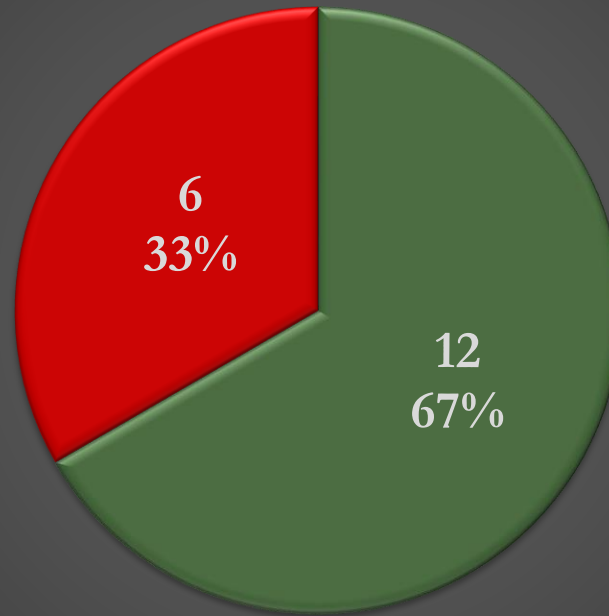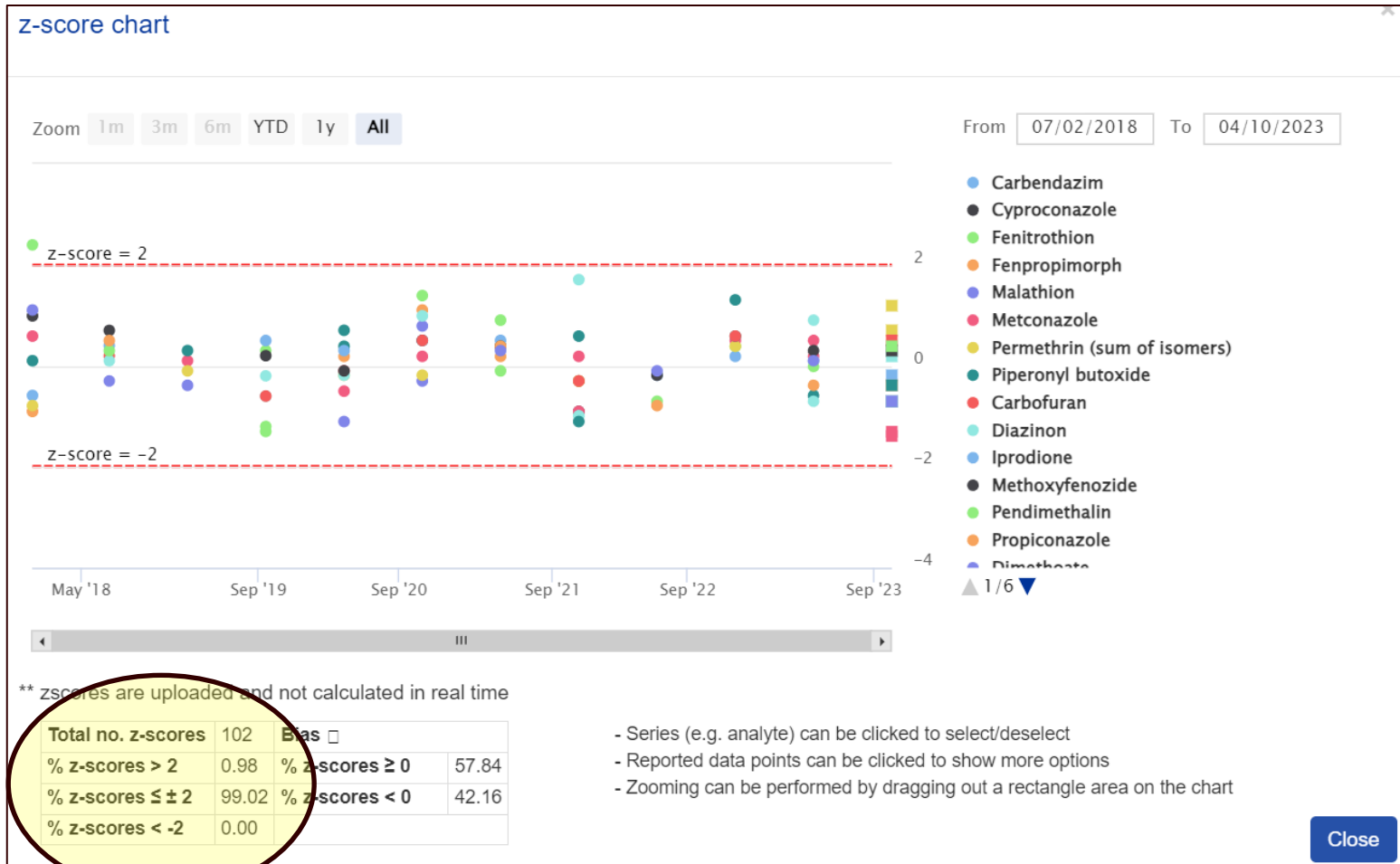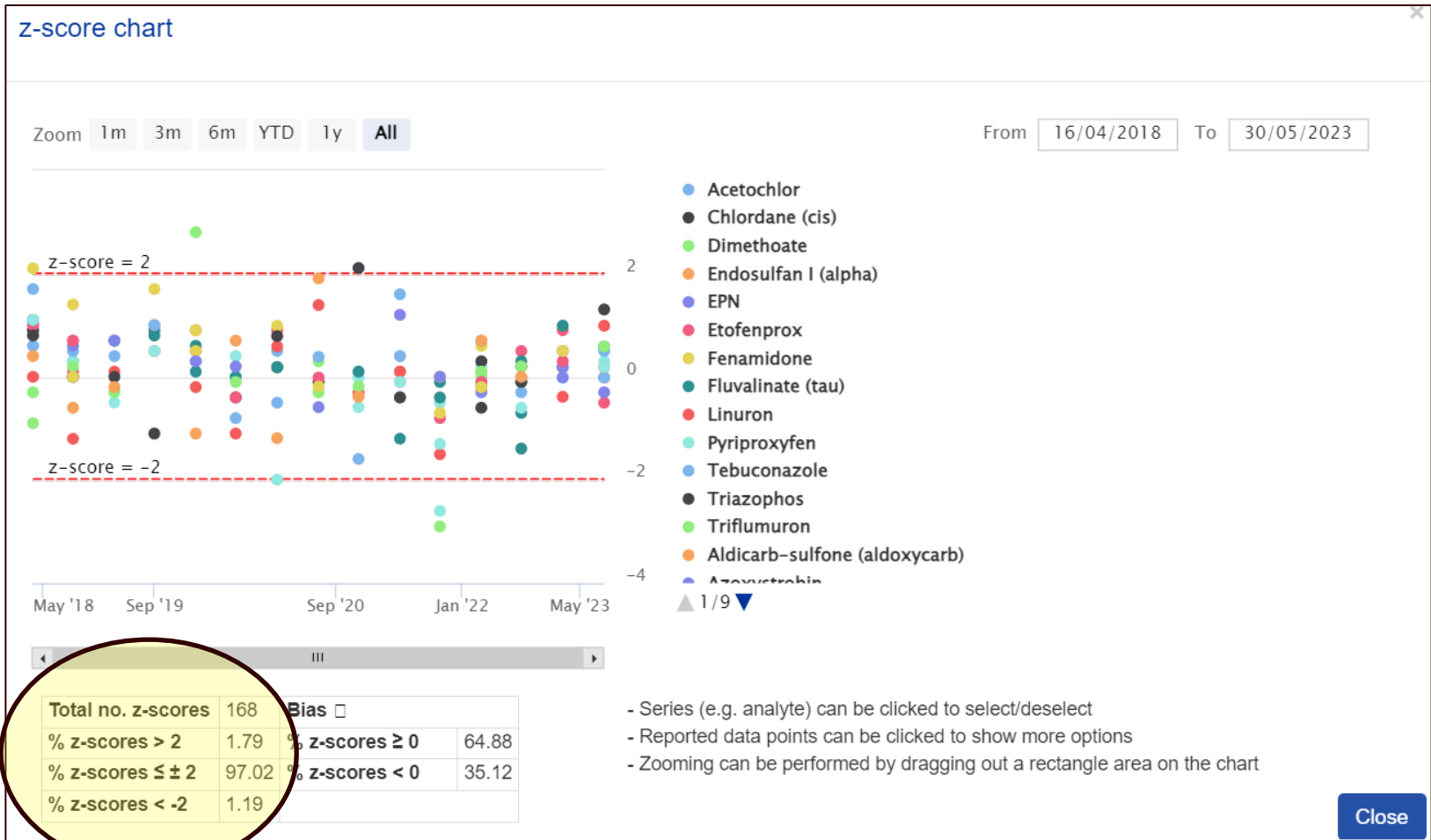
Pesticides Residues Proficiency Tests

- Participating in 40 Proficiency tests (2018-2023).

- Covering all scopes (FV, cereals, pulses, oil, & Honey).

- Good (**satisfactory Z scores**) percentages.

PT performance (Cereals & Oils)

PT performance (FV)

PT performance (Honey)

Published Work

Original Articles

Pesticide residues in fruits and vegetables in Jordan using liquid chromatography/tandem mass spectrometry

Ghaith Radwan Algharibeh ✉ & Malik Salah AlFararjeh

66 Cite this article ↗ https://doi.org/10.1080/19393210.2018.1548505   Check for updates

https://www.tandfonline.com/doi/full/10.1080/19393210.2018.1548505

Veterinary Medicinal Products (VMPs) Residues

- Methods developed on LC-MSMS:

    - **Multiclass multidrug method.**
    - **Triphenylmethane dyes.**

- In total around 40 targets.

VMPs Residues Monitoring

- Specialized monitoring programs.

- Targeting:
  - Chicken meat (2020).
  - Red meat, eggs, milk (2021).
  - Fish meat (2022-2023).
  - Chicken meat (2023).
  - Chicken & red meat (2024).

Future Monitoring Projects

- Glyphosate & Co (2024-2025).

- β-Agonist and steroids (2024-2025).

- DON, ZON, T-2, TH-2 & Patulin (2024-2025).

- Cannabidiol (CBD, Δ-9 THC) in food, supplements, e-cigarettes & drugs.

Thank You