

Radox Food Diagnostics is pleased to announce its participation in FAPAS proficiency testing for Mycotoxins. FAPAS is the largest and most comprehensive analytical chemistry proficiency testing scheme in the food sector. The scheme, which has more than 2000 participants in over 100 countries, was established in 1990 as part of UK government agency Fera (formerly known as CSL).

Proficiency testing is an independent, confidential check of a laboratory's procedures and usually involves participating laboratories running a number of 'blind' samples that are provided by the proficiency testing provider. The laboratories then return their results to the proficiency testing provider who then compares these to both the 'true values' and the values (results) from other laboratories who participated in the same scheme.

FAPAS is an experienced, accredited provider of proficiency tests with options for the food and water, environmental chemistry and microbiology sectors. By taking part in FAPAS proficiency testing schemes, users can be confident in their lab processes, equipment and staff, and thus the results that they produce. Participation can also help laboratories gain and maintain ISO/IEC 17025:2005 accreditation.

Radox Food Diagnostics participated in FAPAS proficiency test 04253 for Mycotoxins which commenced in December 2014. The samples were run on the Biochip Array Technology Evidence Investigator analyser utilising the Mycotoxins Array. Each participant received a maize test sample to be analysed for Aflatoxin B1 (AFB1), Deoxynivalenol (DON), Zearalenone (ZON) and Ochratoxin A (OTA). An assigned value ( $x_a$ ) was determined for each analyte and in conjunction with the standard deviation for proficiency ( $\hat{\sigma}_p$ ) was used to calculate a z-score for each result. Results for this proficiency test are summarised as follows.

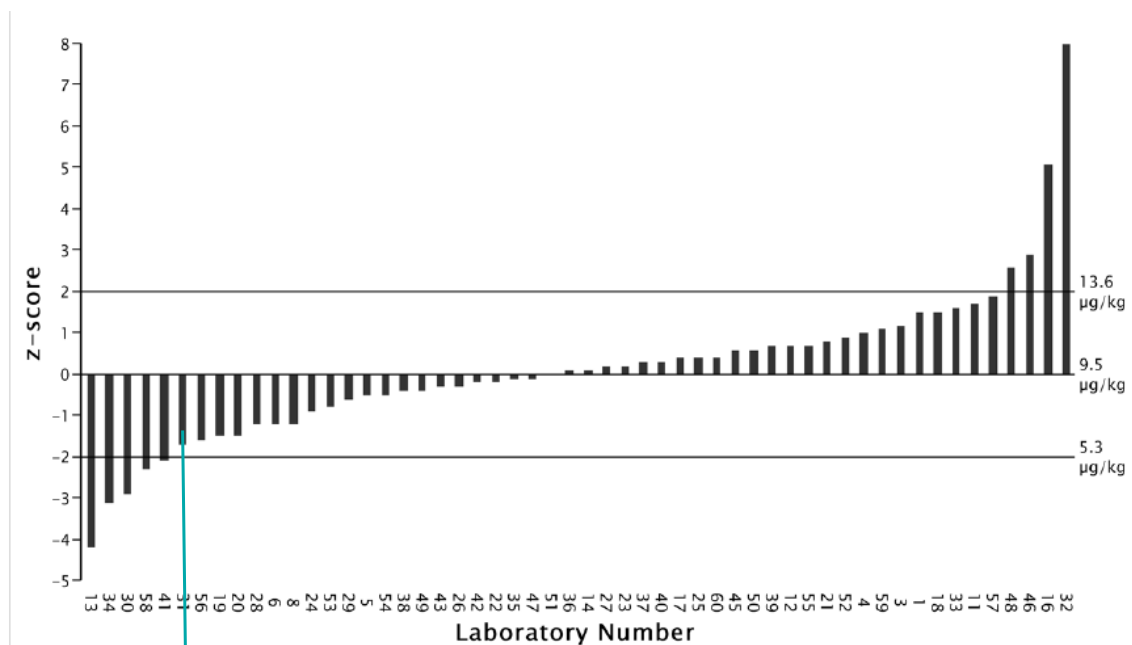
analyte	assigned value, $x_a$ µg/kg	number of scores, $ z  \leq 2$	total number of scores	% $ z  \leq 2$
AFB <sub>1</sub>	9.45	45	54	83
DON	1981	45	55	82
ZON	245	51	57	89
OTA	4.72	38	48	79

The Radox Food Diagnostics' scores lie within the 'z' score and therefore the Radox Food Diagnostic result has been used for the overall assigned value of this FAPAS proficiency sample. This confirms that the method is fit for purpose and comparable to all other methods of testing.

**Table 1: Results and z-Scores**

laboratory number	analyte															
	AFB <sub>1</sub> assigned value 9.45 µg/kg				DON assigned value 1981 µg/kg				ZON assigned value 245 µg/kg				OTA assigned value 4.72 µg/kg			
	result µg/kg	recovery, %	LoD (µg/kg)	z-score	result µg/kg	recovery, %	LoD (µg/kg)	z-score	result µg/kg	recovery, %	LoD (µg/kg)	z-score	result µg/kg	recovery, %	LoD (µg/kg)	z-score
031	5.90	100	0.25	-1.7	1537.94	100	100	-1.6	192.87	100	1.5	-1.1	3.71	100	0.25	-1.0

Randox Food Diagnostics, laboratory number 31 results as shown across for AFB<sub>1</sub>, DON, ZON, OTA.



**Figure 1: z-Scores for AFB<sub>1</sub>**

Randox Food Diagnostics, laboratory number 31 results as shown for AFB<sub>1</sub>,

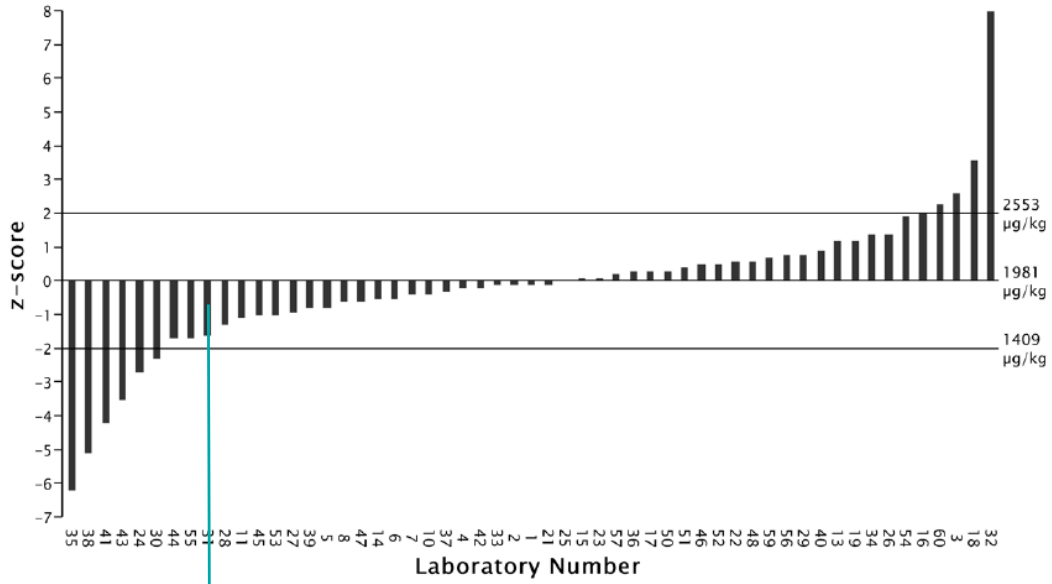


Figure 2: z-Scores for DON



Randex Food Diagnostics, laboratory number 31 results as shown for DON

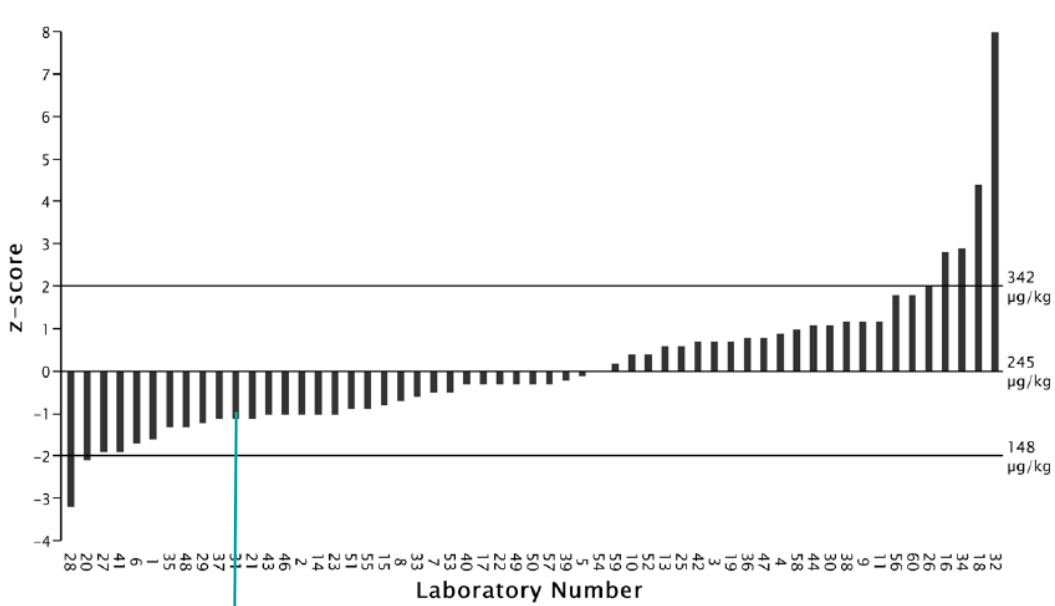


Figure 3: z-Scores for ZON



Randex Food Diagnostics, laboratory number 31 results as shown for ZON

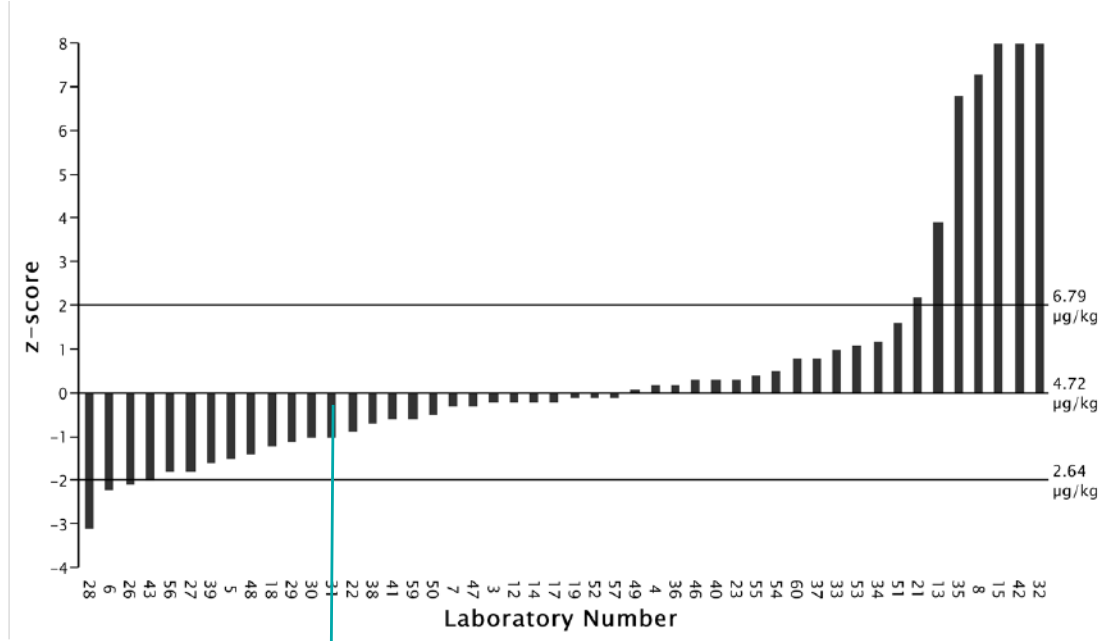


Figure 4: z-Scores for OTA

Radox Food Diagnostics, laboratory number 31 results as shown for OTA

## FAPAS QC Samples Report using the Evidence Investigator Mycotoxins Array I (EV3941A)

The submitted results relate to the below FAPAS QC samples.

### Sample details

The samples were provided ground in labelled foil bags. All were stored at the recommended storage of -20°C until use. The QC material was mixed thoroughly before taking a representative analytical sample.

FAPAS QC Sample	Matrix
T04223QC	Maize
T04242QC	Animal Feed (cereal based)
T2288QC	Animal Feed
T2289QC	Animal Feed
T2299QC	Animal Feed
T22100QC	Animal Feed

Information provided by FAPAS QC material data sheets are as follows:

“The assigned value has been derived from the consensus of laboratories taking part in this proficiency test, using a variety of methods. This is not a certified reference value.

The Range for  $|z| \leq 2$  is the concentration range within the limits of the  $\pm 2$  z-scores. The assigned value and its range have been established from the proficiency test data and are suitable for use by laboratories as a fit-for-purpose quality control measure

### Assay Method

Analysis of samples was performed using the Evidence Investigator Mycotoxins Array I. The Evidence Investigator Mycotoxins Array I is used for the simultaneous quantitative detection of Mycotoxins immunoassays (in parallel) from a single sample.

#### Analytes:

Paxilline (PAX)  
Fumonisin (FUM)  
Ochratoxin A (OTA)  
Aflatoxin G1/G2 (AFG1)  
Ergot Alkaloids (EA)  
Diacetoxyscirpenol (DAS)  
Deoxynivalenol (DON)  
T-2 Toxin (T2)  
Aflatoxin B1 (AFB1)  
Zearalenone (ZEA)

After sample preparation and extraction, two dilutions were performed. Firstly, for low levels of mycotoxins a sensitive detection dilution was carried out (dilution factor = 20). Secondly, for the

guidance values of mycotoxins in feed, a regulatory detection dilution (dilution factor = 250) was carried out on sample extracts.

**Limits of Detection (LOD) (ppb /  $\mu\text{g}/\text{kg}$ )**

	PAX	FUM	OTA	AFG1	EA	DAS	DON	T2	AFB1	ZEA
LOD Sensitive Detection	<50.00	10.00	0.25	0.50	<10.00	<25.00	100.00	5.00	0.25	1.50
LOD Regulatory Detection	625.00	125.00	3.13	6.25	<125.00	<312.50	1250.00	62.50	3.13	18.75

Note: refer to IFU for full details of assay specificity.

## FAPAS QC Sample Results

FAPAS QC MATERIAL	T04223QC				
Matrix	Maize				
Analyte	Assigned Value (ppb)	Range for [z] ≤ 2		MYC I Array (ppb)	
		Low	High	Sensitive detection	Regulatory detection
Aflatoxin B1	5.42	3.03	7.8		3.79
Aflatoxin G1	-	-	-		<6.25
Deoxynivalenol	1247	861	1633		1461
Zearalenone	286	175	396		>250
Ochratoxin A	2.4	1.34	3.46	3.43	<3.1
Fumonisin B1	797	392	1202		-
Fumonisin B2	360	177	543		-
Total Fumonisins	1208	594	1821		>1000
T-2	160	93	228		-
HT-2	105	59	151		-
Sum T-2 & HT-2	271	165	376		228

FAPAS QC MATERIAL	T04242QC				
Matrix	Animal Feed (cereal based)				
Analyte	Assigned Value (ppb)	Range for [z] ≤ 2		MYC I Array (ppb)	
		Low	High	Regulatory detection	
Aflatoxin B1	10.11	5.66	14.56		8.32
Aflatoxin B2	5.23	2.93	7.54		-
Aflatoxin G1	4.11	2.3	5.92		6.56
Aflatoxin G2	1.57	0.88	2.26		-
Aflatoxins (total)	21.2	11.87	30.52	Total	14.9

<b>FAPAS QC MATERIAL</b>	<b>T2288QC</b>			
<b>Matrix</b>	<b>Animal Feed</b>			
<b>Analyte</b>	<b>Assigned Value (ppb)</b>	<b>Range for [z] ≤ 2</b>		<b>MYC I Array (ppb)</b>
		<b>Low</b>	<b>High</b>	<b>Regulatory detection</b>
Zearalenone	131	74	187	137.90

<b>FAPAS QC MATERIAL</b>	<b>T2289QC</b>			
<b>Matrix</b>	<b>Animal Feed</b>			
<b>Analyte</b>	<b>Assigned Value (ppb)</b>	<b>Range for [z] ≤ 2</b>		<b>MYC I Array (ppb)</b>
		<b>Low</b>	<b>High</b>	<b>Regulatory Detection</b>
Deoxynivalenol	996	677	1315	1114.32

<b>FAPAS QC MATERIAL</b>	<b>T2299QC</b>			
<b>Matrix</b>	<b>Animal Feed</b>			
<b>Analyte</b>	<b>Assigned Value (ppb)</b>	<b>Range for [z] ≤ 2</b>		<b>MYC I Array (ppb)</b>
		<b>Low</b>	<b>High</b>	<b>Regulatory detection</b>
Zearalenone	150	86	214	152.27

<b>FAPAS QC MATERIAL</b>	<b>T22100QC</b>			
<b>Matrix</b>	<b>Animal Feed</b>			
<b>Analyte</b>	<b>Assigned Value (ppb)</b>	<b>Range for [z] ≤ 2</b>		<b>MYC I Array (ppb)</b>
		<b>Low</b>	<b>High</b>	<b>Regulatory detection</b>
Deoxynivalenol	1375	956	1794	1695.53