

















# Data present at PSA Latin American Meeting 2024

- At the PSA Latin American Scientific Conference in Foz do Iguaçu, in October 2024, **Pegasus Science** released mycotoxin occurrence results generated by its **PegasusMycostat** research system.
- The data presented was extracted from an extensive database made up of more than 2.5 million analyzes carried out in 89 countries, covering all continents.
- The main objective of the presentation was to disseminate results observed in the Americas, highlighting the main mycotoxins detected in poultry production. Furthermore, a simplified risk analysis was presented for each mycotoxin, allowing a better understanding of the risks associated with mycotoxin contamination in different countries on the **American continent**.
- Data presented here provide a comprehensive view of the prevalence and risk of mycotoxins, contributing to the formulation of mitigation strategies and the improvement of food safety. **Pegasus Science** encourages the use of this information to make more assertive decisions to control risks related to mycotoxin contamination.

Sponsors:



# Occurrence of the most important mycotoxins - GLOBAL - 1986 to 2024

Matrix	Number of samples	Prevalence (%)	Average (ppb)	Average of positives (ppb)	Maximum (ppb)
<b>Total Fumonisin (B1+B2)</b>	211,339	74 	1,383	1,888	764,000
<b>Patulin</b>	11,010	50 	15.9	31.5	9,201
<b>Deoxynivalenol</b>	259,037	45 	334.5	854.2	672,833
<b>Zearalenone</b>	313,245	35 	76.9	238.0	378,750
<b>Nivalenol</b>	16,254	31 	107.3	398.6	6,776
<b>Total Aflatoxins (B1+B2+G1+G2)</b>	354,894	27 	12.3	43.3	27,519
<b>15-AcDON</b>	10,390	23 	106.5	403.3	4,811
<b>HT-2 Toxin</b>	12,873	19 	85.3	544.0	9,786
<b>3-AcDON</b>	10,458	15 	32.9	161.7	13,109
<b>Cyclopiazonic Acid</b>	1,862	13 	2.1	12.1	270.0
<b>Citrinin</b>	1,694	11 	26.4	101.6	25,487
<b>T-2 Toxin</b>	52,240	10 	18.8	405.2	7,500
<b>Fusarenon-X</b>	3,279	10 	35.4	235.6	3,204
<b>Ochratoxin A</b>	118,590	6 	5.1	83.3	22,384
<b>DAS (diacetoxyscirpenol)</b>	5,793	3 	2.8	98.5	4,300
<b>TOTAL</b>	<b>1.382,958</b>	<b>25</b> 	-	-	-

# Occurrence of mycotoxins in maize - WORLD - 1986 to 2024



Mycotoxin	Number of samples	Prevalence (%)	Average (ppb)	Average of positives (ppb)	Maximum (ppb)
Fumonisin	137,791	84	1,794	2,134	764,000
Nivalenol	4,564	45	185	470	6,776
15-AcDON	3,239	38	197	497	4,811
Deoxynivalenol	108,464	33	123	671	84,860
Zearalenone	155,000	32	47	165	77,325
Aflatoxins	179,914	30	13	41	27,519
HT-2	2,875	27	67	668	9,786
3-AcDON	3,075	18	30	143	1,047
Cyclopiazonic Ac	951	17	4	12	181
Fusarenon X	882	16	51	265	3,204
Citrinin	980	11	13	47	5,074
T-2	22,826	9	14	561	6,062
Ochratoxin A	46,846	4	3	165	22,384
Patulin	151	4	0	-	-
DAS	1,892	3	2	50	257
<b>SUM/AVERAGE</b>	<b>669,450</b>	<b>40</b>	-	-	-

# Co-occurrence of mycotoxins in maize - WORLD - 1986 to 2024

















Mycotoxin	Number of samples	Prevalence (%)	Average 1 <sup>st</sup> (ppb)	Average 2 <sup>nd</sup> (ppb)	Average 3 <sup>rd</sup> (ppb)
Zea + Fumo	80,710	59	43	1,667	-
Afla + Fumo	89,610	54	5	1,730	-
Fumo + Don	68,838	53	1,652	81	-
Afla + Zea + Fumo	76,189	47	4	42	1,652
Zea + Fumo + Don	64,394	45	36	1,608	80
Fumo + Ota	26,426	42	1,527	1	-
Afla + Fumo + Don	64,794	41	3	1,630	79
Zea + Fumo + Ota	24,849	39	40	1,493	1
Afla + Fumo + Ota	24,774	34	4	1,520	1
Fumo + Don + Ota	23,811	33	1,535	116	1
Afla + Zea	107,988	30	15	42	-
Zea + Don	68,753	27	41	93	-
Afla + Zea + Don	63,309	23	4	36	81
Afla + Don	66,586	19	4	80	-
Zea + Don + Ota	23,527	17	40	120	1
Afla + Zea + Ota	29,517	17	27	46	3
Zea + Ota	31,420	15	46	3	-
Afla + Don + Ota	23,050	12	4	121	1
Afla + Ota	31,234	12	27	3	-
Don + Ota	24,847	9	116	1	-
<b>TOTAL DOUBLES</b>	<b>596,412</b>	<b>36</b>	-	-	-
<b>TOTAL TRIPLES</b>	<b>418,214</b>	<b>34</b>	-	-	-

# Occurrence of Aflatoxins in products related to poultry associated to Country

## Mycotoxin Risk - America - 1986 to 2024



Matrix	Number of samples	Prevalence (%)	Average (ppb)	Country	Number of samples	CMR
Poultry Feed	332	91 	94.4	Argentina	1384	12
Animal Feed	40,124	38 	15.9	Peru	1685	62
Corn	179,759	30 	13.4	Colombia	410	74
Broilers Feed	6,374	26 	1.9	Chile	671	78
Rice	7,311	18 	7.6	Bolivia	1207	79
Triticale	193	17 	4.3	United States	1225	188
Sorghum	2,472	15 	1.8	Brazil	250295	376
Soybeans	9,565	15 	1.0	Mexico	842	441
Light Wheat	256	11 	21.8	Ecuador	155	489
Millet	420	11 	57.3	Costa Rica	352	525
Barley	3,167	7.0 	1.2			
Premix	235	6.0 	1.2			
Wheat	19,614	6.0 	1.4			
<b>TOTAL</b>	<b>269,822</b>	<b>22</b> 	<b>17.2</b>			










$$CMR = \left\{ [AC(\bar{x})] * PR \left( \% = \frac{+\Sigma n}{\Sigma n} \right) \right\}$$

AC=Average contamination  
PR=Prevalence

# Occurrence of Fumonisin in products related to poultry associated to Country
















## Mycotoxin Risk - America - 1986 to 2024



Matrix	Number of samples	Prevalence (%)	Average (ppb)	Country	Number of samples	CMR
Corn	137,491	84 	1,793.8	United States	3967	76
Broilers Feed	7,235	83 	694.8	Bolivia	1233	89
Animal Feed	24,192	77 	1,168.5	Mexico	254	93
Cereals	2,891	50 	892.0	Brazil	148468	104
Sorghum	1,157	22 	259.3	Ecuador	91	127
Rice	1,502	20 	133.1	Argentina	1300	152
Wheat	9,399	16 	146.9	Colombia	380	239
Soybeans	4,299	12 	160.6	Peru	1747	271
<b>TOTAL</b>	<b>188,166</b>	<b>45</b> 	<b>655.8</b>	$\text{CMR} = \left\{ [\text{AC} (\bar{x})] * \text{PR} \left( \% = \frac{+\sum n}{\sum n} \right) \right\}$ AC=Average contamination PR=Prevalence		

# Occurrence of Deoxynivalenol in products related to poultry associated to Country Mycotoxin Risk - America - 1986 to 2024



Matrix	Number of samples	Prevalence (%)	Average (ppb)	Country	Number of samples	CMR
Triticale	311	85 	1,1	Bolivia Argentina Chile Colombia Ecuador Brazil Mexico Peru United States	1075 1130 225 386 117 169784 265 1918 2699	1
Wheat	52,470	69 	658.9			20
Barley	28,389	65 	765.6			30
Premix	194	63 	2,6			56
Rye	303	63 	191.7			74
Cereals	5,939	54 	213.3			111
Broilers Feed	5,151	41 	214.2			126
Animal Feed	13,733	39 	203.3			204
Oat	2,373	33 	183.5			857
Corn	108,288	33 	122.7			
Poultry Feed	300	29 	278.0			
Millet	161	19 	65.3			
Soybeanmeals	4,898	10 	57.8			
Rice	3,342	10 	291.9			
<b>TOTAL</b>	<b>225,852</b>	<b>44</b> 	<b>502.6</b>			














$$CMR = \left\{ [AC(\bar{x})] * PR \left( \% = \frac{+\Sigma n}{\Sigma n} \right) \right\}$$

AC=Average contamination  
PR=Prevalence

# Occurrence of Ochratoxin A in products related to poultry associated to Country

## Mycotoxin Risk - America - 1986 to 2024



Matrix	Number of samples	Prevalence (%)	Average (ppb)	Country	Number of samples	CMR
Poultry Feed	271	32 	20.1	Bolivia	407	0
Sorghum	582	25 	10.1	Colombia	111	0
Cereals	2,996	24 	40.4	Ecuador	65	0
Oat	1,295	15 	17.1	Peru	763	0
Millet	341	11 	57.6	Argentina	139	2
Rice	5,674	8 	2.2	Brazil	79697	5
Broilers Feed	558	8 	0.2	Mexico	265	65
Barley	9,676	6 	1.0	United States	1088	79
Soybeans	2,632	6 	0.6	Chile	632	315
Wheat	16,221	4 	0.9			
Millet	46,819	4 	3.2			
Malt	9,771	2 	0.3			
<b>TOTAL</b>	<b>96,836</b>	<b>12</b> 	<b>12.7</b>			








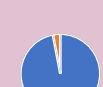

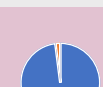

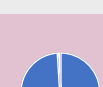

$$CMR = \left\{ [AC(\bar{x})] * PR \left( \% = \frac{+\Sigma n}{\Sigma n} \right) \right\}$$

AC=Average contamination  
PR=Prevalence



# Occurrence of T-2 in products related to poultry - America - 1986 to 2024



Matrix	Number of samples	Prevalence (%)	Average (ppb)	Average of positives (ppb)	Maximum (ppb)
Oat	904	42 	145.7	362.7	1,102
Poultry Feed	101	34 	442.6	1,277	7,500
Barley	2,675	26 	12.0	194.0	440.0
Wheat	5,119	15 	38.6	574.1	1,506
Corn	22,751	9 	14.3	561.1	6,062
Soybeans	2,159	5 	1.8	205.3	422.5
Rice	509	4 	1.9	140.0	171.6
Broilers Feed	1,189	3 	0.1	137.9	194.0
Sorghum	398	2 	9.0	397.3	691.3
Animal Feed	8,111	2 	3.6	141.2	1,718
Millet	122	1 	102.9	2,738	338.8
Malt	580	1 	6.8	828.6	153.0
<b>TOTAL</b>	<b>44,933</b>	<b>12</b> 	<b>64.9</b>	<b>-</b>	<b>-</b>

